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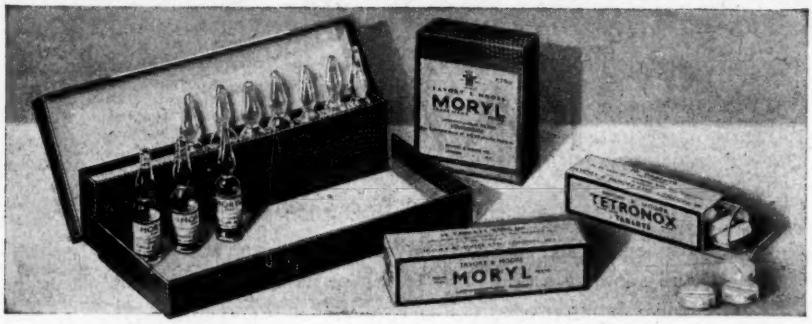

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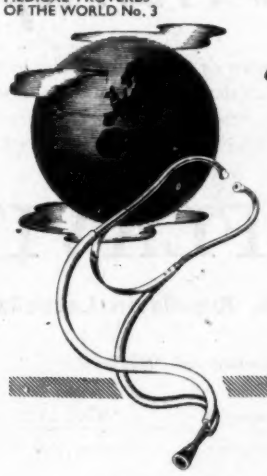

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INTRATHORACIC METALLIC FOREIGN BODIES

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LIEUT.-COLONEL RAMC

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MAJOR RAMC; MEDICAL SPECIALIST

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MAJOR RAMC; RADIOLOGIST

IN view of the risk of infection, hæmorrhage and structural damage, our practice has been to remove intrathoracic missiles of 1 cm. or more unless the anatomical approach involved a greater risk.

Of 264 severe chest casualties,[1] 92 had retained intrathoracic missiles, excluding shell fragments or bullets superficial to the rib plane. Of these, 50 were operated on, and in 49 the missile was found and removed. The one exception was a large shell fragment, embedded in the interventricular septum of the heart; pericardiotomy was performed, but its removal seemed impossible. This patient and one with a pulmonary missile were the only 2 who died among the 50 (table I).

TABLE I—RETAINED INTRATHORACIC MISSILES (92 CASES)

	Lung foreign bodies	Pleural foreign bodies	Mediastinal cardiac and pericardial	Foreign bodies in the endothoracic fascia
Total number ..	59	15	14	4
Number operated on	25	14	7	4
Deaths	1	0	1	0

SOME COMPLICATIONS

The patients were seen at a forward general hospital within 2–50 days of being wounded, and we were able to study only the more immediate complications. The commonest was pleural infection; 10 patients subsequently operated upon for missile removal arrived with established pleural infection, 5 having missiles in the pleural cavity and 5 in the lung.

Lung abscess was seen in 5 patients. Apart from 2 who died from secondary hæmorrhage before the missile had been operated on, none of these presented the grave picture produced by non-traumatic lung abscesses. The history of these 2 was as follows:—

CASE 1.—Capt. A., aged 26, wounded on Dec. 9, 1943, was admitted a month later with a large right empyema drained in forward areas by rib-resection and closed drainage. A small sucking wound in the first right interspace still required occlusion by soft-paraffin gauze. Radiography showed a large shell fragment (2 × 1 cm.) in the right upper lobe very close to the mediastinum. Progress was fair for a fortnight, but a violent attack of coughing was then followed by a large hæmorrhage through the sucking wound and into the empyema bottle. After massive blood-transfusion a right anterior thoracotomy exposed the bleeding-point; this was in the ascending aorta, against which lay the missile, which was also surrounded by a small lung abscess. The missile was removed, but suture of the septic eroded aortic wall was impossible and tight packing was used. Death took place 16 hours later. Hæmolytic streptococci were recovered from the abscess cavity. Possibly an earlier removal of the metal, in spite of the coexistent empyema, might have prevented this catastrophe.

CASE 2.—A prisoner-of-war, aged 30, wounded on Jan. 31, 1944, was admitted 16 days later with a septic open pneumothorax wound in the second left space and with a drained (closed) empyema (left). His general condition was very poor; X rays showed a small metal fragment (12 × 6 mm.) in the left lower lobe near the pericardium. A fortnight later he had a sudden hæmorrhage which flooded the bronchi of both lungs. Autopsy revealed a gangrenous empyema; a small abscess cavity, ½ in. in diameter, in the anterior border of the left lower lobe contained the shell fragment. In the wall of the cavity were a bronchial fistula and an eroded pulmonary vessel of medium size. The bronchi of both sides contained recent blood clot. Although this patient was always too ill for removal of the missile to be feasible, death was the result of infection around a retained lung missile.

SELECTION FOR OPERATION

In deciding whether, and when, to operate, the condition of the patient, the site and size of the missile and the state of the pleura and lung are all important. Seen early, the battle casualty is usually distressed by the sudden alteration in the physiology of his thorax and often by blood loss. A major thoracotomy at such a stage is seldom wise, and we prefer to defer operation if possible for at least 10 days except in the case of pleural missiles, which as a rule have traversed the lung and often give rise to early pleural infection (5 out of 14 pleural foreign bodies had infected effusions on admission). But too long a delay before operation may add considerably to the technical difficulties, the result of adhesion formation. The most difficult removal we have undertaken was performed two months after wounding, when a pyopneumothorax had caused dense pleural adhesions.

We felt that jagged fragments of reasonable size (1 cm. or over) should be removed because they carry in pieces of clothing and because they are more likely to cause hæmoptysis later. Occasionally multiple fragments have presented an awkward problem; if they are close together, removal is not difficult, but we have rejected cases in which both lungs were involved or where there were two or more widely separated missiles in one lung. The description of the ultimate fate of such patients would be of great value. An observation of interest and of assistance is that over 80% of the lung missiles removed were comparatively superficial in the lung. Only one bullet in the series was embedded in the lung; one bullet was removed from the pleural cavity and one from the pericardium. The remainder were shell fragments.

When missiles are situated very peripherally in the lung, infection of the pleura may rapidly follow. Such fragments urgently need removal. Mediastinal and pericardial missiles, if operable, should not be left too long, because of the danger of infection or hæmorrhage. Atelectasis on the same side as the missile does not contra-indicate operation; thoracotomy has been done on several occasions in the presence of collapsed lobes, and the collapse has never persisted. Operation has not been attempted, however, when there was atelectasis on the opposite side. The selection of mediastinal and cardiac foreign bodies is considered later.

RADIOLOGICAL INVESTIGATION

In assessing the suitability of patients for operation radiography plays a large part. Its objects are (*a*) exact anatomical localisation; (*b*) investigation of the pathological state, with reference to the surgical approach; and (*c*) estimation of the damage along the track of the missile.

Localisation technique.—Postero-anterior and lateral films are first taken, using deep penetration if necessary because of effusion, lung contusion or atelectasis. For intrapulmonary missiles these usually suffice, and the exact position of the missile in relation to heart, hilum or lobes of lung can be given. It is especially useful to be able to say whether the foreign body lies near a fissure and to which surface of the particular lobe it is likely to be nearest.

For investigation of metal fragments lying close to the chest wall, the diaphragm or the heart, fluoroscopic screening is the method of choice. The underlying principle is to so position the patient that the central ray of the X-ray beam passes tangentially to the parietes at the site of the foreign body. Only thus can one determine whether it lies within or without the chest. The same holds good for the diaphragm, and a tube that can be angulated tangentially to the dome of the diaphragm is invaluable in determining the position of missiles relative to this muscle. In the region of the paravertebral gutter it may be impossible, owing to the thickness of tissue, to say definitely where the missile lies, but enough information can be provided to enable the surgeon to proceed with exactness.

Estimated distances from the midline and the rib level, posteriorly or anteriorly, are useful aids to location. When missiles lie in, or just outside, the rib plane, we locate them with a needle under the screen before operation.

In the case of paracardiac foreign bodies, only if they cannot be separated from the heart outline by a thorough all-round-

1. This series is not precisely the same as the series of 260 cases analysed in our paper in *The Lancet* of August 12, p. 197, which excluded African casualties; but there is a large overlap.

the-heart tangential screening is it safe to assume their presence within the pericardium or heart wall. It is worth noting too that very small intracardiac foreign bodies have twice been missed on the film (because their movement blurs the shadows they cast) and visualised only on the screen.

We have found it practicable in most cases to wait for accurate localisation until confusing shadows, such as hæmothorax or lung contusion, have been removed by treatment. This custom also avoids wrong conclusions because of collapsed or displaced lobes.

Pathological state.—The missile or missiles localised, the next step is to give the surgeon an accurate account of the difficulties he is likely to meet. Rib damage, effusion, pleural fibrin deposit, collapse, lung contusion, missile track, the proximity of bronchi or calcified glands (easily mistaken for foreign bodies at operation) are the most important conditions to assess. For example, the presence of strong adhesions or a tough "missile track" may necessitate an entirely different plan of campaign. On the other hand, localisation of the foreign body at operation may be greatly facilitated by finding a "track" leading down to it. Again when a lobe collapses a foreign body lying in it may alter its position by a matter of inches.

Missile track.—Apart from removing the foreign body, thoracotomy is often utilised for repairing damage to rib or diaphragm. By careful study of the missile's probable course from the entry wound to its position of rest, this damage may be estimated with fair accuracy.

In spite of all preliminary precautions and care, 4 cases were met in which the foreign body was not easily found at operation. In such cases we screen the patient in the theatre, transferring him to a stretcher if need be, and localise the foreign body by means of parallax and an opaque instrument or by passing a needle down to it. In no case have we failed to remove the missile, and usually localisation has been by no means the most anxious or difficult part of the operation.

Lung Missiles

A total of 25 patients had one or more missiles removed; all made good recoveries except 1 who died. The cases fall into two groups according to whether pleural infection was present.

Removal in absence of pleural infection (20 *cases*).—The average time between wounding and operation was 25 days. Abstention from routine postoperative pleural drainage seems to be justified in that only 3 developed infected effusions needing rib-resection; each required on an average less than two postoperative aspirations (i.e., 35 aspirations were done on 20 patients). One rifle bullet and 19 shell fragments were removed, most of the casualties being admitted from an area where the enemy was using mortar guns in great numbers. Operative findings of note were adhesions (11 examples), palpable tracks leading to the missile (6), cavities around the metal (5, 3 of which were bacteriologically sterile) and calcified lymph-nodes (3). Portions of indriven rib fragments were removed on three occasions in addition to the metal; portions of battledress were removed four times, and it is interesting to note that only once were organisms recovered from them on culture, and these were *Staphylococcus aureus*. Of the missiles 16 were examined bacteriologically: 8 were sterile, *Staph. aureus* was found twice, *Staph. albus* three times, a pneumococcus once, and "clostridia" twice.

One lobectomy was done.

CASE 3.—During the attempted removal of a shell fragment near the left lower lobe bronchus the latter was found to be involved in an inflammatory process and was opened. This metal fragment was covered by a piece of battledress (from which *Staph. aureus* was recovered). No drainage was employed and the patient made a complete recovery with full expansion of the upper lobe, and no chest-wall deformity after aspirations and intrapleural instillation of penicillin.

Among the 20 cases there was one death, 8 weeks after operation:

CASE 4.—A huge shell fragment over 4 cm. long and a portion of rib had been removed from the right lung; a huge bronchopleural fistula developed and there were also severe thigh and buttock wounds. Death was from septicæmia.

The other 19 cases made satisfactory recoveries: 2 were evacuated with small empyema cavities still being drained. The remaining 16 had fully expanded lungs with actively moving chest walls free from deformity. In 5 there was a temporary collapse of a lobe, which re-expanded without bronchoscopic suction.

Removal in presence of pleural infection.—In 5 cases shell fragments were removed from the lung in the presence of empyema; the infecting organisms were a hæmolytic streptococcus, *Staph. aureus* (twice), a pneumococcus and "clostridia" with *B. influenzæ*. In all but one case the missiles were superficial and 2 had broncho-pleural fistulæ. A larger incision than the one normally employed for empyema drainage was used, and this allowed a more thorough pleural toilet with removal of large, infected fibrin clots. Convalescence was satisfactory.

OPERATIVE APPROACH

The approach chosen depends largely on the radiographic findings and the state of the pleura. If there is a pyothorax, rib-resection is sited suitably for thorough toilet of the empyema cavity. We are becoming increasingly conscious of the complexities of war-wound empyemas; adhesions form rapidly and pleural pockets often need thorough exploration. "Classical" thoracotomy is not always possible and four different approaches have been employed.

Classical thoracotomy through the 7th and 8th space, usually after resection of a long length of rib, is the commonest approach. The incision is placed more anteriorly or more posteriorly according to radiological localisation—antero-lateral or postero-lateral thoracotomy. For wide exposure we use the Tudor Edwards rib-spreader; otherwise the single Tuffier retractor suffices.

Anterior thoracotomy is employed for missiles lying in the anterior half of the lung and for the approach to the superior mediastinum. A rib is resected; if more room is required, one or more costal cartilages are divided and the space is widely retracted. The curved incision used by Tudor Edwards for operations on the upper anterior chest and mediastinum has been very useful.

Subscapular thoracotomy is reserved for missiles lying towards the posterior aspect of the upper part of the upper lobes. A portion of the 4th or 5th ribs is resected and the space widely retracted with Tuffier's retractor.

The small *intercostal incision* (as employed in the operation of clot clearance) is used for superficial lung missiles and for some pleural foreign bodies; also for missiles localised by needle contact done radiologically before operation. With forcible rib-spreading a surprisingly good exposure can be obtained.

Once the pleural cavity has been opened, the course of operation depends on what is found. Adhesions are usually divided in the region of the lobe lodging the missile, unless the latter is readily palpable. In 5 cases adhesions have presented considerable difficulty, though this is rarely comparable with the difficulties encountered in lobectomy for bronchiectasis.

As we have usually operated before pleural adhesions became thoroughly organised and before the pleura has thickened over the affected lobe, it has rarely been difficult to feel the missile easily. Four problems have, however, arisen:—

1. *Missile tracks.*—Often a missile traversing the lung tissue leaves a track. This may contain air, in which case it is readily diagnosed by radiography; or it may fill with blood, leaving a solid track also visible on the radiogram. At operation we have repeatedly felt these tracks; they may be so indurated as to give the impression that their firmest part is the missile itself. In one case so definite was this impression that a faultily placed incision into the lung was made. But careful preoperative study of the radiogram will always show the missile at the end of such a track. The track can then be employed as a guide.
2. *Calcified lymph-nodes.*—In 1 patient (case 5) the missile lay behind the right lower lobe hilum; the lobe was held up by Duval's lung forceps and in the area of the missile four hard masses were palpable. A needle placed on each produced the same grating sensation. Hurried study of the radiogram in the theatre showed the foreign body to be in the centre of a group of large calcified glands. To prevent a needlessly difficult dissection the lung was held up by forceps and radiologically studied with the portable screen and the foreign body accurately localised with a needle. The missile was then removed through a very

small lung incision. We now take very careful preoperative note of calcified glands, and when these are present near the metal fragment the portable apparatus is kept ready in the theatre.

3. *Proximity of missile to a bronchus.*—In one patient (case 6) the foreign body lay behind the hilum of the left lower lobe. Adhesions were difficult and mobilisation of the lung was not easy. The missile had caused inflammation, and in trying to free it from the bronchus that structure was opened. A tourniquet lobectomy was done and the chest closed without drainage. The patient made a complete recovery following aspirations combined with instillation of sodium penicillin into the pleural cavity. The upper lobe expanded to fill the left hæmothorax and the patient was evacuated as a sitting case. This is the only lobectomy done in our combined war experience of over 400 severe chest casualties.
4. *Late removal of large missile after a pyopneumothorax.*—This was done once (case 7). The patient reached the chest centre 4 weeks after being wounded. A large saddle-shaped pyopneumothorax with an anterior and posterior pocket was drained. A large missile lay in the right lower lobe near the posterior surface of the hilum. A month after the drainage operation the patient was in good condition but still required open-tube drainage. No free pleural cavity was present and X rays revealed dense pleural thickening. The empyema drainage wound was slightly enlarged; the foreign body was localised by a needle on the table under radiological vision; it lay 5 cm. deep. A blunt dissection with long forceps alongside the needle led to the missile, which was removed blindly. The whole procedure was slow and tedious, but caused no bleeding. The patient was discharged 3 weeks later, healed and well.

REMOVAL OF MISSILE AND POSTOPERATIVE MANAGEMENT

Once the missile has been palpated, the lung is incised with a knife (diathermy is not available) and, rather after Hilton's method for abscess incision, the hole in the lung is enlarged and the metal withdrawn. Lung vessels have twice required ligation. The foreign body bed is then insufflated with sulphathiazole or penicillin powder and the dead space is obliterated with a few catgut sutures. After a pleural toilet the chest is completely closed without drainage unless there is gross pleural infection. Air is then drawn off with an artificial pneumothorax apparatus.

Management after operation has been along orthodox lines. We are satisfied that routine closure of the chest without drainage is preferable to tube drainage provided postoperative aspirations are done thoroughly. In only 3 cases has there been enough pleural infection to call for operative drainage. The pleural cavity can defend itself against infection quite as well as the peritoneum.

Penicillin is a most valuable bacteriostatic agent, and if the postoperative effusion becomes infected with gram-positive organisms it can be rapidly sterilised by intrapleural injection of 30,000 to 50,000 units sodium penicillin in 2–4 oz. of saline at the end of the aspiration.

Pleural Foreign Bodies

Of the 15 cases 14 had the missile removed.

Removal in absence of pleural infection.—The operation is straightforward if a careful radiological investigation is made. In 7 out of 9 cases recovery was uneventful.

CASE 8 developed an infection of the pleural pocket, but there was evidence of considerable lung damage and a bronchopleural fistula which was probably the cause of the infection. Such a space would probably have become infected if the missile had not been removed.

CASE 9 had a spontaneous pneumothorax. At operation there was evidence of localised pleurisy with underlying lung adhesion, and presumably the lung tore away from this area after operation. He developed an effusion that remained uninfected and was aspirated.

The treatment of this group is largely the treatment of a simple hæmothorax combined with the surgical removal of the missile. For the 9 patients 13 postoperative aspirations were required. All the missiles were shell fragments, except one rifle bullet. From two missiles only were organisms recovered (*B. coli* and *micrococci*). Apart from the one empyema, all recovered with restoration of full function of lung and chest wall.

Removal in presence of pleural infection.—On admission 5 patients had grossly infected pleural cavities; they were, in effect, examples of infected clotted hæmothorax, and the operations were primarily for the evacuation of these cavities. The slow-moving missiles damaged the lung considerably before lodging in the pleural cavity. At operation 3 were seen to have bronchopleural fistulæ. The presence of the foreign body in the pleura may have had a clotting effect on the accompanying hæmothorax. All these patients made satisfactory recoveries.

Mediastinal, Pericardial and Cardiac Foreign Bodies

We have already mentioned that the usual penetration radiography may not reveal the missile in this area. Two requisites in all cases where missiles in the mediastinum are suspected are a deep-penetration film and screening to exclude small intracardiac foreign bodies. The latter are easily overlooked on a straight film.

Table II shows the 14 cases in this group.

TABLE II

Foreign bodies	No.	Removed	Results
Pericardial	3	2	Two complete recoveries; one unwilling to have operation.
Intracardiac	3	0	One death following pericardiotomy
Mediastinal	8	3	All operated cases completely recovered. No symptoms in unoperated cases.

PERICARDIAL MISSILES

The operative removal of missiles from 2 patients was not difficult, and both made uneventful recoveries.

CASE 10.—A Ghurkha soldier, aged 19, wounded in left chest by shell fragment. A left hæmothorax was aspirated three times, 47 oz. in all. The left lower lobe showed the radiological signs of hæmatoma. A metallic fragment 12 × 4 mm. was localised in the left pericardial reflection. There were no physical signs of a cardiac or pericardial lesion. At operation (35 days after wounding) part of the anterior end of the 5th left rib and its costal cartilage were resected; through the left pleural cavity the foreign body was palpated in the left pericardial reflection; the pericardium was opened and the piece of metal, which was firmly adherent to the parietal pericardium, was removed; there was no excess of pericardial fluid. The pericardium was left open to allow drainage into the pleura. The chest was completely closed without drainage. The foreign body yielded no organism on culture. A left pleural effusion was aspirated twice after operation (10 oz. in all), and in 16 days the lung was fully re-expanded and the patient up and well.

CASE 11.—Prisoner-of-war. Bullet wound left lower chest; operated on in forward area for abdominal injury; free blood found in peritoneum from hole in liver. Admitted 19 days after wounding. General condition good. Radiological evidence of collapse of right lower lobe with small effusion. A bullet lay in the left inferior cardiac region 1 cm. deep to the rib plane and 5 cm. from the midline. On screening, the bullet showed slight transmitted pulsation. No cardiac physical signs.

Operation was postponed till 48 days after wounding because of slow re-expansion of the right lower lobe. The left 5th costal cartilage was resected. The bullet lay in the pericardium over the left ventricle and in this area the pleura was adherent to the pericardium. Both pleura and pericardium were opened to allow removal of bullet. The pericardium was left open to permit pericardial drainage into the pleural cavity. Chest closed without drainage. Clostridia were recovered from the bullet bed. Two days after operation 4 oz. of bloodstained fluid was aspirated from left pleural cavity. Recovery uneventful.

CASE 12.—Sepoy. Shell fragment passed across left lower lobe from entry wound in 5th left space (mid-axillary line). A shallow left hæmothorax and massive hæmatoma were seen radiographically in left lower lobe. A metallic foreign body (12 × 6 × 2 mm.) lay on the posterolateral aspect of the left auricle, and on screening it seemed to be embedded in the pericardial wall. The cardiac and pericardial shadows were of normal size. There were no cardiac symptoms or signs. Operation was advised but not accepted. He was evacuated 4 weeks after being wounded, with no symptoms.

TABLE III—MEDIASTINAL FOREIGN BODIES

Case	Site of FB	Operation	Results
14	Rt. side of sup. mediastinum behind sup. vena cava.	22 days after wound. 2nd rib resected. Rt. transpleural mediastinotomy. Mod. adhesion of rt. upper lobe to mediastinum. Missile had traversed upper lobe. FB 15 × 14 mm. in a pocket immediately post. to sup. vena cava. Closed without drainage.	One postop. aspiration of rt. pleural cavity. Up well, with lung completely re-expanded in 14 days.
15	Sup. mediastinum in lumen of rt. subclavian vein.	20 days after wound. Incision through 1st interspace on assumption that FB lay in apex of rt. lung. Subclavian vein identified and cleaned. FB then seen inside vein (no preoperative œdema of arm). Vein held up between two tapes; incised. FB and a little clot removed. Lateral suture of vessel wall with fine catgut and muscle graft. Closed without drainage.	Healed by first intention. No postop. œdema of arm.
16	Abscess cavity to rt. of pericardium overlying rt. auricle. Infected rt. hæmothorax.	20 days after wound. Resection 3rd costal cart. Very large FB (2 × 1 cm.) in abscess cavity, of which pericardium formed medial wall.	Very good recovery. Associated infected hæmothorax treated by penicillin instillation and aspiration, and then by minor thoracotomy, without drainage, for clot clearance.

CARDIAC FOREIGN BODIES

In the 3 patients the distribution of missiles, all fragments of high-explosive shell, was as follows: one large fragment in the interventricular septum, two tiny fragments embedded in the right ventricular wall and one small fragment (3 × 4 mm.) in the right auricular wall. There were no abnormal physical signs or symptoms in the two last patients, and exploration was considered unjustifiable. They were both evacuated to the United Kingdom. The remaining patient was operated on but died.

CASE 13.—Pte. B. Aged 28. Wounded by shell fragment in left 5th interspace in mid-axillary line. A left hæmothorax of moderate size developed and was aspirated once in the forward areas before admission to our centre. In the early stages he was shocked and was treated by blood and plasma transfusion.

Ten days after wounding his general condition was fair. Clinical signs of left hæmothorax. The presence of a hæmothorax was confirmed radiologically; the heart shadow was large but no foreign body was seen on film. The hæmothorax was aspirated twice (42 oz. in all). The heart sounds were normal but faint. The patient was screened to elucidate the course of the enlarged heart shadow, and a metallic foreign body (15 × 8 mm.) was seen. Its position and movement suggested that it lay in the interventricular septum: a pericardial effusion was diagnosed. Electrocardiography (done through the kindness of a New Zealand hospital) showed elevation of ST interval in lead 1, not so marked in lead 2; poor volume in lead 3; suggestion of early infarction of anterior descending branch of left coronary.

Operation was performed 20 days after wounding, under local anæsthesia and intratracheal nitrous oxide and oxygen. Curved left parasternal incision. Resection of 3rd, 4th and 5th costal cartilages. Pleura brushed away laterally, and pericardium opened over left ventricle. Organised blood-clot was found on parietal and visceral pericardium. Over the posterolateral aspect of the left ventricle (upper third of wall) the parietal pericardium was densely adherent, and this was presumably where the missile had entered. The missile was not palpable, and any attempt to remove it by cardiac incision was considered unwise in view of the poor condition of the left ventricular wall in the area of adhesion. The pericardium was left widely open. *Staphylococcus albus* was grown from the intrapericardial fibrin. On the day after operation the heart was fibrillating. Digitalin was given but death followed next day.

In this case exploration was undertaken in the hope that removal of the missile would be practicable. Perhaps it was unwise in view of the electrocardiographic evidence of coronary damage.

MEDIASTINAL FOREIGN BODIES

Of 8 cases, 3 successfully underwent operative removal (table III).

In the other 5 cases with mediastinal foreign bodies operation was considered inadvisable because of the site of the missiles—e.g., impacted in vertebral bodies behind large vessels—or their small size. One lay in front of the body of the third dorsal vertebra behind the œsophagus; a barium swallow revealed no œsophageal destruction or obstruction. The after-history of such a case would be instructive.

A fatal case of secondary hæmorrhage from the ascending aorta has already been described (case 1).

FOREIGN BODIES IN ENDOTHORACIC FASCIA

Missiles lodging in this fascia—which thoracic surgeons know to be a very definite anatomical structure—may give rise to an extrapleural hæmothorax. We have seen this condition eleven times. It is commonly associated with fracture of ribs by missiles with or without pleural penetration. It may be an effusion as large as 10–20 oz. Radiological characteristics of extrapleural hæmothorax are:—

The effusion is almost always localised to a part of the chest wall, without spreading diffusely up or down it. It may arise gently or steeply at its periphery, and in 2 cases has even appeared "overhanging" at its lower edge. It may indent the lung for several centimetres. When viewed at right-angles to the plane of its base, it appears as a diffuse shadow, but in the late stages it may have a well-defined border. It usually casts a dense shadow and may be accompanied by an intrapleural effusion. When situated in the region of the apex it has a tendency to lie over it like a cap. In size it may vary from a small "blister" to a large rounded collection up to 15 cm. across its base. There is almost always damage to adjacent ribs.

Such extrapleural effusions may become infected. The following is one of three cases in which this happened.

CASE 17.—Spr. C. was seen 9 days after wounding by a shell fragment in 6th left space in nipple line. Radiography revealed contusion of the left lower lobe. A collection of fluid lay in relation to a missile (10 × 12 mm.) beneath the anterior end of the 5th left costal cartilage. Part of the 5th rib was resected, and the resected portion showed a hole through which the missile had passed. The metal lay in an extrapleural pocket of pus from which streptococci were recovered. Recovery was uneventful after open drainage.

The other missiles removed from the endothoracic fascia presented no real clinical difficulty.

Conclusions

1. Of a recent group of 264 severe chest wounds, 92 had lodged intrathoracic missiles. Of these, 50 were operated on, 25 foreign bodies being removed from the lung (1 death), 14 from the pleural cavity, 7 from the mediastinum or pericardium, and 4 from the endothoracic fascia. One retained intracardiac missile lay in the interventricular septum and was not removed; the patient died. Of the 50 patients 48 made good recoveries.

2. After removal of lung missiles the pleural cavity is not drained unless it was infected before operation. Postoperative effusions are aspirated and treated by instillation of sodium penicillin if infection by gram-positive organisms develops.

3. Missiles in the endothoracic fascia may give rise to extrapleural hæmothorax.

We are grateful to Colonel Wm. C. Mackinnon for permission to publish this paper, to Major L. O. Mountford for his skill in anæsthesia and to Captain T. C. H. Davies, RAMC, and Captain J. S. Glennie, RAMC, for invaluable help.

CLINICAL TRIAL OF GLOBIN INSULIN AND OTHER INSULINS WITH DELAYED ACTION

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OF the many types of delayed-action insulin which have been described, only protamine insulinate ('Insulin Retard') and protamine-zinc insulin (PZI) have been widely marketed. Most workers agree that for suitable patients the introduction of PZI has been a great advance, but it has the disadvantage that in some patients hyperglycæmia during the day cannot be prevented without producing hypoglycæmia at night, no matter what adjustment of diet is made. The need to mix protamine insulinate with buffer immediately before use has prevented it from becoming popular. The production of 'Globin Insulin' (BWCo) seems to have been the most successful attempt so far made to obviate these disadvantages; experimental or clinical results are described by Reiner et al. (1939), Bauman (1939), Marks (1940), Andrews et al. (1940), Duncan and Barnes (1941), Calvet et al. (1941), Bailey and Marble (1942), Levitt and Schaus (1942), and Lawrence (1943). Most of those who have used globin insulin (GI) clinically state or imply that it has a useful place in therapy, but Lawrence says that its action differs little from that of PZI and that its introduction is liable to cause confusion.

After my own trials with GI began two years ago, Colwell, Izzo and Stryker (1942) claimed that by mixing PZI with equal or larger proportions of soluble insulin (SI) all variations between the actions of PZI and SI could be obtained. These proportions of SI are much more than have been used by most physicians. Because PZI normally contains an excess of protamine, the use of less than 50% of SI results in the mixture acting like pure PZI. Such results obviously have a bearing on the value of GI, and I therefore decided to compare the action of GI with such mixtures as well as with PZI alone. Trials were made in two ways.

INVESTIGATION

Group 1.—Ten diabetics not readily controlled with SI or PZI were brought into hospital and maintained on the same diet and insulin as they had been taking at home. After a minimum of 24 hours, a test-period was begun in which, without alteration in diet, insulin was given at 8 AM and the blood-sugar estimated every 2 hours until 8 AM next day, except between midnight and 8 AM, when the intervals were 4 hours. The type but not the dosage of insulin was then changed (in one case a reduced dosage of PZI and SI mixture had to be used), diet remaining as before. A further minimum period of 24 hours on this new type of insulin was allowed to elapse and then a similar test-period commenced.

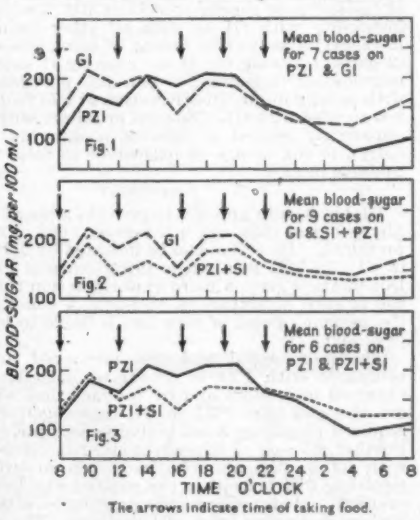
The interval between test-periods was much shorter than ideal, but many patients came into hospital largely to allow the tests to be performed and had to be off work for this purpose. Blood-sugar was estimated by Hagedorn and Jensen's method using capillary blood. Crystalline insulin (BWCo) or PZI was used. The diets had usually been adjusted before admission to hospital to suit PZI, and since they were not changed when GI or mixtures of PZI and SI were used it must be emphasised that curves obtained with types of insulin other than PZI do not represent the best possible control with these types of insulin; they show the relative effects of the different insulin preparations in patients taking the same diet.

Group 2.—Thirty-one outpatients were treated with GI as well as one member of group 1 who subsequently used GI as an outpatient. Most of the cases in this group were selected for treatment with GI because other types of insulin had been unsatisfactory in some respect: 12 had been troubled with hypoglycæmic reactions on PZI; 8 had failed to respond well on PZI or PZI+SI; 9 were given GI for convenience instead of two injections of SI where previously PZI would have been used; 3 had had troublesome local reactions with PZI.

RESULTS

Group 1.—Individual blood-sugar values are not given, though there were considerable differences in the levels of the blood-sugar curves in different cases. It seemed justifiable, besides giving a more comprehensible picture of the results, to plot the means as in the figures.

Fig. 1 shows that in the 7 cases treated with PZI and GI, the blood-sugar rose sharply for 2 hours after injection whether GI or PZI were used. With PZI the general upward trend continued for 10 hours, but with GI only for 2 hours. With either type the minimum blood-sugar was noted at 4 AM. Though the maximum blood-sugars with PZI and GI were almost identical, there was a definitely lower minimum with PZI than with GI. The sharp drop at 4 PM with GI is noteworthy since it was at this hour that hypoglycæmic symptoms were most common in the outpatient group.



The general forms of the two curves are obviously different. It is apparent that to have increased the dose of PZI to prevent diurnal hyperglycæmia would have resulted in nocturnal hypoglycæmia. Better control of the blood-sugar might, of course, have been obtained by varying the diet, but this was deliberately avoided in order to show the relative effects of the two types of insulin.

Fig. 2 shows that with mixtures of PZI and SI the uniformity of the blood-sugar throughout the 24 hours was even better than with GI, hyperglycæmia being well controlled without nocturnal hypoglycæmia. The early sharp fall in blood-sugar usually seen when SI is given alone was absent, and there seems no doubt that such mixtures do not show the independent action of each type of insulin.

For comparison the curves obtained with PZI and PZI+SI are shown together in fig. 3.

Group 2.—A summary of the data relating to these patients is given in the table. GI was reckoned successful only if glycosuria were reasonably well controlled, there was freedom from hypoglycæmia when following the ordinary routine, the patient maintained a satisfactory weight and felt well.

SUMMARY OF DATA RELATING TO GROUP 2

Cases	Age (yr.)		Carbohydrate av. g./day		Insulin (units)	
	Av.	R.	Prev.	On GI	Prev.	GI
32 (19M, 13F)	38-8	23–79	156	157	Av.: 32·6 R: 10–65	32·6 8–60

Av. = average. R = range. Prev. = previously.

Of these 32 patients, 21 responded favourably to GI; of the 8 who previously failed to respond to PZI or PZI+SI, 4 had glycosuria reasonably well controlled on GI and required, on the average, a slightly smaller dose than that which had failed to effect control previously. The incidence of hypoglycæmia with GI was at first fairly high, but this was undoubtedly due to lack of experience in its use. Alteration in diet to advance the carbohydrate intake in the day largely overcame the difficulty. The distribution of carbohydrate found suitable for most patients was: 8 AM 25%; 11 AM 10%; 12.30 PM 30%; 4 PM 10%; 7 PM 25%. If the patient does not want the small allowances of carbohydrate

between the main meals these portions may be added to the morning and midday meals. Hypoglycæmia with GI was almost invariable between 11 AM and noon or between 4 and 6 PM. It never occurred at night except in one patient who took GI at night for convenience of injection.

The causes of failure with GI were: lack of response just as there had been previous lack of response to PZI (4 cases); poor general control of diet (2 cases); extreme instability with GI as with all other forms of insulin (2 cases); a subjective feeling of being less well with GI (2 cases); taking GI in the evening (1 case). Of local reactions to injection, 3 patients previously troubled with painful lumps after injection of PZI had appreciably less trouble with GI. Success or failure with GI was not apparently related to dose of insulin (up to 60 units daily), to sex or age of patient or to total daily carbohydrate intake.

DISCUSSION

Globin insulin appears to provide a result more nearly physiological than any other single type of insulin so far produced. Its action can be imitated by using a mixture of SI and PZI in a single injection, and in some cases this mixture gives a more uniform action than GI. The use of such a mixture is, however, a complication from the patient's point of view and is liable to lead to errors in dosage.

The more rapid and less prolonged action of GI compared with PZI is confirmed both by the curves obtained in group 1 and by the fact that when patients are changed from PZI to GI, rearrangement of diet is required providing more carbohydrate early in the day. Further, no case of hypoglycæmia has occurred at night with GI in patients who had been so troubled when receiving PZI (except in the patient who took GI in the evening). This confirms the experience of the American authors and refutes that of Lawrence. The arrangement of the day's diet required with GI usually suits patients well.

The freedom from local reactions with GI is noteworthy and is one of its best features. Bauman (1939b) has also noted this. Reiner, Searle and Lang (1939b) point out that globin is only weakly antigenic, but a similar claim has been made for protamine (Kern and Langner 1939). As is to be expected with any protein preparation, individuals are occasionally found who are allergic to GI. One patient, not included in the above groups, who was found to be allergic to SI and PZI was also allergic to GI. No instance of atrophy of subcutaneous fat has been seen after GI, though the number of cases is too small to justify a conclusion on this point.

The benefit of using mixtures of PZI and SI containing over 50% of the latter is confirmed. It was thought that there might be difficulty in obtaining a constant result with these mixtures owing to the excess of protamine added to PZI. British regulations for preparation of PZI state that the free insulin in PZI must not exceed a certain amount. The excess of protamine may therefore vary in different batches (I am informed that this matter is in process of adjustment between British insulin manufacturers). It seemed probable that such variations would cause corresponding variations in the rate of response to mixtures of PZI and SI injected simultaneously, but no such effects were observed.

As is well known, differences occur in the rate of response of different patients to the same variety of insulin. The above results show the general response, but some people will react more slowly or more rapidly. Since certain patients seem to respond poorly or not at all to PZI, it is not surprising that occasionally cases should fail to respond to GI. In this series a high proportion of failures was to be expected since most of the patients treated with GI were selected because of some difficulty with other types of insulin. Four who apparently failed to respond to PZI responded well to GI.

SUMMARY

Globin insulin was tested in 41 cases of diabetes mellitus. In 10 the blood-sugar was followed for 24 hours and the results compared with those obtained using protamine-zinc insulin alone or combined with soluble insulin.

Globin insulin acts more quickly than protamine-zinc insulin and its action is less sustained. Its action can be closely imitated by mixtures of protamine-zinc and soluble insulin containing over 50% of the latter.

For many diabetics globin insulin is more suitable than protamine-zinc insulin. It is more convenient to use than mixtures of protamine-zinc and soluble insulin. There was less tendency to local reactions than with protamine-zinc insulin.

I am indebted to Burroughs Wellcome and Co. for a supply of globin insulin used in these trials, and to Sister M. B. Muir and the nursing staff of the Metabolic Clinic for much assistance in this work.

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ANEURYSM OF THE ANTERIOR TIBIAL ARTERY

WITH A NOTE ON ARTERIOGRAPHY *

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WAR surgery once again directs our attention to injuries of blood-vessels and in particular to the vessels of the limbs. In open wounds the problem is an immediate one and to some extent simplified, for the degree of damage to the vascular structures can be estimated and the appropriate treatment carried out at the primary operation. It is, however, equally common to see serious vascular lesions result from small insignificant penetrating or perforating wounds, of the multiple type so common in this war, which may conceivably be overlooked.

An American soldier was seen some hours after the Sicilian landing with multiple injuries, including a large sucking wound of the right chest. There was a small non-pulsatile swelling on the medial side of the left arm with a very small penetrating wound nearby. He had no radial pulse. Operation showed a complete division of the brachial artery with wide separation of its ends. Simple ligation was successful.

The initial vascular injury may be limited to a slight contusion or even a small tear of the vessel, both of which lesions may resolve. In other cases the tendency is for the effects of injury to progress, and then the vessel either ruptures spontaneously into the tissues or an aneurysmal sac slowly forms, or both.

Spontaneous rupture of an injured vessel was seen in a British infantry officer, also from the Sicilian beaches. He had a through-and-through gunshot wound of the left leg, the missile passing backwards between both bones and grooving the fibula. The wounds were excised and left open but looked so well 4 days later that delayed primary suture was successfully carried out. The limb was apparently healed and remained free from the slightest discomfort. Two weeks later pain and swelling developed, and inflammation was suspected in the wound track; 48 hours later pulsation was present in the calf and operation disclosed a recent massive blood-clot over a ruptured posterior tibial artery. In this case also simple ligation was successful.

CASE-RECORD

The following case is one of established traumatic aneurysm which was unsuspected until some months later.

A captain in the Yugoslav forces was wounded by German mortar-fire on Sept. 6, 1943. A small fragment entered the left leg anteriorly about 2 in. below the tuberosity of the tibia; it seemed to cause little discomfort at the time, but nevertheless he was admitted to hospital, and 5 days later was trans-

* Demonstrated to the Malta Services Clinical Club, Feb. 23, 1944.

ferred on horseback to another unit. His leg swelled during this journey and remained swollen for some days, but after rest in bed he appeared quite fit 7 days after injury. He was discharged to his unit and managed his duties fairly satisfactorily, though his leg always became stiff and tense after any exercise. This discomfort varied; at times he thought the limb was weaker. There were no skin changes. He was seen at a British medical unit on Dec. 19 with a very swollen left leg; on Jan. 7, 1944, at another unit, radiography showed a small foreign body lying posterior to the interosseous membrane. He was admitted to a British general hospital on Jan. 16 as a walking case with a gross, uniform swelling of the whole left leg below the knee. There was no pitting on pressure, no skin changes and no enlargement of the superficial veins. The movements of the ankle-joints were normal but no tibial pulses could be detected. The limb was elevated in bed and a week later the swelling had subsided except for a more localised area in the upper part of the limb which was obviously pulsatile (fig. 1). In front, the area was circumscribed and appeared subcutaneous at one point. Behind, it was much less defined and extended over a wide area deep to the calf muscles. A loud systolic bruit synchronous with arterial pulse was heard on auscultation. This disappeared when the femoral artery was compressed in the groin. The posterior tibial pulse was present at the ankle, but the anterior tibial pulse was only just perceptible. Screening of the limb showed the foreign body, lying posterior to the interosseous membrane and immobile (fig. 2). The aneurysmal sac was obviously continuous through the interosseous membrane, and from its anatomical position could be derived from either or both tibial arteries.

Fig. 1—After subsidence of swelling; site of wound and area of pulsation marked.

Arteriography.—It was necessary to determine the exact size, shape and anatomical location of the sac. Arteriography is the only certain method of deciding this preoperatively. Iodoxyl ('Pyelectan' Glaxo) was the only contrast medium to be had and the few textbooks available referred almost exclusively to the use of 'Thorotrast.'

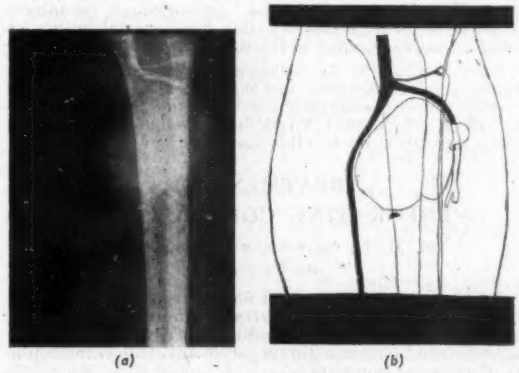
Using 'Pentothal' anæsthesia, the femoral artery was punctured in the groin and 10 c.cm. of iodoxyl was rapidly injected into the vessel. For this Labat's 10 c.cm. syringe with bayonet-fitting needle (20 standard wire gauge) was used. A radiogram taken during the injection only showed a faint line in the soft tissues of the calf which was presumed to be the posterior tibial artery, but no shadow of the aneurysmal sac could be made out. A further injection was also unsuccessful. The patient suffered no ill effects from these punctures—there was neither arterial spasm nor discomfort.

Fig. 2—Radiogram, taken on admission, showing foreign body and soft tissue swelling.

Experiment showed that the injection of 10 c.cm. of water through the 20 s.w.g. needle, when the point was under the surface of a basin of water, took 45 sec. with all the pressure possible. The largest needle available (known to Army surgeons as "needles, aspirating") was rather more than 2 mm. in diameter and corresponds approximately to 13 s.w.g. Using this needle and a 20 c.cm. syringe full of water, the whole amount was ejected in 2·5 sec. under similar conditions. Accordingly it was decided to use the large needle and to expose the vessel for puncture.

Under chloroform anæsthesia the limb was adjusted on the X-ray couch so that the plane of the interosseous membrane was at right angles to that of the couch top. This was checked by a preliminary screening. The under-couch tube was used. The femoral artery was exposed by a small transverse incision in the groin and 20 c.cm. of iodoxyl was injected into the vessel in 10 sec., the vessel being compressed above by an assistant. Films were taken at 2 sec. intervals from beginning of the injection, and in all 6 films were exposed. There was fairly brisk hæmorrhage from the puncture site after removal of the needle, but this was easily controlled by digital pressure and ceased entirely after 5 min. It could, however, be a serious complication to a blind puncture of the vessel.

The arteriograms varied during the course of the injection, but the whole series make an interesting study. The third arteriogram in the series, taken 6 sec. from the start of the injection, shows the outline of the popliteal artery and the beginning of the anterior tibial artery with articular branches to the knee (fig. 3*a*). The aneurysmal sac is clearly shown and it is constant for the whole series (fig. 3*b*). It is roughly circular in outline with a niche on its distal border corresponding to the interosseous membrane, and has a prominence anteriorly which overlaps the shadow of the anterior tibial artery. The anterior tibial artery distal to the aneurysm was much wider than the part proximal, which may be attributed to the damage to the periarterial sympathetic nerves at the point of rupture of the vessel. The posterior tibial artery was clearly outlined, though much less dense than the first part of the anterior tibial artery, and was obviously being displaced posteriorly by the aneurysm. The last arteriogram of the series, taken 12 sec. from the beginning of the injection, showed in addition to the sac the small saphenous vein to be the only vessel well filled, and the whole of the calf was covered by a complicated network of venous shadows, both superficial and deep, which obscured the arterial shadows.



(*a*) (*b*)

Fig. 3—(*a*) Arteriogram taken 6 sec. after the beginning of injection. Popliteal artery, beginning of anterior tibial artery, aneurysm and two small arteries to the knee-joint outlined. (*b*) Diagram illustrating (*a*).

Operation.—The patient suffered no ill effects from this arteriography, and operation for the cure of the condition was carried out a week later on Feb. 26.

An anterior incision was made over the swelling. The fascia cruris was intact. There was a swelling—the size of a hen's egg—in the anterior crural compartment, incorporating the anterior tibial artery. The vessel was seen coming through the interosseous membrane and secured by ligation at this point; the vessel was similarly ligated distal to the sac. The anterior part of the sac was now removed and found to be partly filled with laminated blood-clot. The opening in the interosseous membrane admitted two fingers and led into a cavity—the size of the palm of the hand—deep to the calf muscles and containing blood-clot. The tourniquet was now released and there was troublesome hæmorrhage from the neck of the sac at the level of the interosseous membrane. Fortunately these vessel openings were seen and secured from inside the sac. Blood-clot was evacuated and a large muscle flap inserted into the posterior cavity and sutured to the neck of the sac and to the interosseous membrane. Hæmostasis was secure and at the end of operation both ends of the anterior tibial artery were seen pulsating forcibly. The anterior tibial nerve was identified and safeguarded through-

out the operation—it was not displaced. The wound healed by first intention and recovery was uneventful.

DISCUSSION

While the diagnosis of wounds of blood-vessels soon after injury is easy if the possibility is kept in mind during the examination of casualties, it subsequently becomes much more difficult and may not be made until 3–4 weeks later because attention has been occupied with obvious injuries to bone and nerves. The diagnostic signs of aneurysm appear late, and as Philippides[1] points out it is easy to make the diagnosis when pulsation and a vascular murmur are present.

Merely to diagnose these lesions is not enough, and to effect a cure the surgeon must know the exact nature of the vascular abnormality, its site, the anatomical structures involved, and the state of the collateral circulation. Arteriography is an invaluable aid to diagnosis, enabling him to operate with exact knowledge of the condition. Thorotrast has now been used with varying success for the purpose, but as it is not eliminated by the body it should be avoided when repeated arteriography is necessary. Iodoxyl is, of course, easily and quickly eliminated from the blood-stream; it fulfils all the requirements of a contrast medium, and produced no ill effects on the peripheral circulation in this case. Schröder[2] used diodone ('Per-Abrodil') (50%) in his series, but although he injects papaverine in addition to allay the arterial spasm he admits that discomfort in the limb may follow its use.

I am indebted to my colleague, Major Douglas Gordon, RAMC, whose enthusiasm and radiological skill contributed much to the successful result in this case, and to my commanding officer, Colonel W. I. FitzGerald Powell, for his interest in and permission to publish this case.

TREATMENT OF PERFORATING CORNEAL ULCER

E. M. G. GALTON, M B LOND., D O M S
MAJOR RAMC

PERFORATION of a corneal ulcer is comparatively rare in civil practice in this country. Among peoples living under more primitive conditions, where disabilities are tolerated longer without complaint, this catastrophe is much more common.

In India, within a period of 6 months, I treated 15 men with ulcers which had perforated and in which the iris had prolapsed. They were seen late rather than early after perforation—most of them between 4 and 8 days afterwards. All except one were treated by excision of the prolapse and by covering the corneal hole with a conjunctival flap. In addition, the more serious cases were given sulphanilamide both by mouth and as a local application. Although there was little new in the technique used, the results were so satisfactory in spite of adverse conditions, that they seem worth recording.

ÆTIOLOGY

All occurred during the hot weather when acute eye infections are rife. Only three men had never had trachoma; the others were in stages 3 or 4 with varying degrees of conjunctival scarring. Eight had a fair degree of entropion with trichiasis which was probably responsible for the initial corneal involvement; this was well shown in three of them, who, thinking that the irritation and discharge were due to the ingrowing hairs, had had them dealt with by the local barber. He had removed some but broken others, leaving bristles to excoriate the corneal epithelium. Infection and ulceration rapidly followed. The other five had complained of discharge and soreness for some time which had not improved with simple treatment, and their eyes had become progressively more painful and photophobic.

It is the exception for trichiasis to produce anything more than vascularisation, opacification, and perhaps superficial ulceration of the cornea. Presumably the virulence of the infection and the malnutrition of the subjects were responsible for the invasion of the deeper layers in these cases.

Two men had hypopyon ulcers which had perforated in spite of treatment; they also had xerotic patches on their bulbar conjunctivæ. One cornea had broken down following an abrasion from the swish of a mule's tail. One man, who later refused operation, had been discharged from the hospital on the previous day with a healed corneal ulcer. Instead of rejoining his unit he spent the night in the bazaar, became involved in a fracas and was hit in the affected eye. The freshly healed floor of the ulcer gave way and a small knuckle of iris prolapsed. No special factor could be found in the remaining three cases. No-one in the series had a sac with overt infection.

TREATMENT

There is not the same urgency to excise an iris prolapse when it follows the perforation of an ulcer as there is when it results from a perforating injury. In fact, it is an advantage to leave it for three or four days because the conjunctival sac can be cleaned up, and the ulcer can start to heal under the more favourable conditions which now obtain.

Either normal saline or lotio hydrargyri perchloridi, 1 in 10,000, was used to irrigate the affected eyes. The latter is very popular in India and proved very useful for dirty cases. Irrigation was done as often as necessary to keep the eye free from discharge. The more heavily infected, including those with hypopyon (Roggenkamper 1939) were given sulphanilamide by mouth (8, 6, 6, 6 grammes) and their lower fornices were dusted with the finely powdered drug after each irrigation (Bellows and Chinn 1942). Acriflavine 1 in 1000 was used for the remainder. Ingrowing hairs were epilated. Unguentum atropineæ 1% was inserted twice daily. Diets were augmented and cod-liver oil, 'Marmite' and extra oranges were added.

After one or two days' treatment the eye was ready for operation. If the conjunctiva was clean and the patient coöperative, local anæsthesia (cocaine 4% and subconjunctival 'Novocain' 2%) was used. Seven patients either threatened to be refractory or had conjunctivæ which promised to be difficult to mobilise; these were given intravenous 'Sodium Pentothal,' which gave a satisfactory anæsthesia with no unpleasant sequelæ.

Only two types of conjunctival flap were used: a visor for ulcers in the upper or lower halves of the cornea, and a double-visor united with mattress sutures for central ulcers and for those in the interpalpebral zone (Kuhnt 1922). The mattress stitch has distinct advantages, for the single suture cuts out more quickly, allowing premature retraction of the flaps.

Operation.—The conjunctiva is carefully dissected from the limbus between 9 o'clock and 3 o'clock, either above or below as necessary. It is undermined sufficiently to be drawn easily over the hole with as little tension as possible. When this is being estimated the speculum should be withdrawn, otherwise its pull on the fornices gives an erroneous impression of the amount of conjunctiva available. The lids are held apart by an assistant with a retractor. A mattress suture is inserted, but not tied, into each corner of the flap and into the corresponding point on the other side of the limbus. It is sometimes difficult to get the flap to lie comfortably without the stitches trespassing on to the cornea, but this is of little moment and does no harm. Peterson's suggestion of scarifying the cornea to facilitate adhesion of the flap was not adopted.

In three of the ulcers the iris was found to be quite firmly adherent, but no difficulty was experienced in loosening it from the margins with an iris repositor before it could be properly delivered for excision. At this stage it is essential not to forget to warn the patient of the slight pain he will feel and to impress on an inexperienced assistant the dangers of pressing on the globe with his fixation forceps.

Major A. Seymour Philps, RAMC, has kindly pointed out that pain associated with delivery of the iris can invariably be prevented by a standard retrobulbar injection of novocain 2%. As it is never possible to predict a patient's reaction it would probably be wiser to use this in every case of iris excision. The chances of a retrobulbar hæmorrhage are

1. Philippides, D. *Chirurg*, 1942, **14**, 321.
2. Schröder, C. H. *Arch. klin. Chir.* 1943, **204**, 411.

remote and inadvertent intravenous injection can be avoided by the usual precautions and by pushing home the plunger only whilst withdrawing the syringe. One man who had already given considerable trouble by sneezing violently whenever his eye was examined, did so just as the iris was being excised. A large iridectomy was done and an iridodialysis was produced. He had the largest prolapse in the series with a hole 2 mm. by 3 mm. lying horizontally just above the centre of the pupil. The ultimate result was quite beyond expectation and is discussed below.

After excision of the prolapse the iris should retract; any remnants left entangled in the ulcer must be carefully drawn out and cut. The stitches pulling over the flap or flaps are gently tied, acriflavine or sulphanilamide is instilled and a pad and bandage applied to both eyes. It was found that the longer both eyes could be covered the less quickly the flaps retracted. When the patient was amenable the sound eye was kept covered for 4 days. Both eyes were dressed daily, the lid margins cleaned and ung. atropinæ 1% applied to the bad eye.

The stitches were not removed until they had cut out, usually on the 5th or 6th day. In every case the ulcer had healed. In two the ulcer itself could not be seen, as a large tongue of conjunctiva had remained adherent, completely covering the affected area. But as in both the surrounding cornea was bright, the anterior chamber clear, the iris free from injection and the tension within normal limits, it looked as if these had also healed.

Apart from these two the others could have been discharged 8 or 9 days after the operation. Surprisingly, there were no septic complications; they were kept in a little longer so that they could be given a course of stimulating treatment in an endeavour to clear some of the residual opacities. The man whose prolapse was not excised had an irritable eye and could not be discharged for 24 days.

RESULTS

A visual result can only be given in two cases. The remainder were illiterate and an accurate estimation of their vision was difficult to obtain. Most were left with one more leucoma in an already nebulous cornea, but were able to carry on with their manual jobs quite well, two had to be discharged from the Army because in each the ulcer had involved the central area of the only good eye. The two literates fortunately were able to return to their clerical work.

The man with the large ulcer who sneezed at the iridectomy got 6/24 in the bad eye and with — 1·25 Cyl. axis 15 got 6/12(6/9,4). When last seen 4 months after the perforation the eye was white with a pale atrophic pseudopterygium still covering the site of the ulcer; there was also a small peripheral anterior synechia. He was free from discomfort after a day's work, and his only complaint was from the trichiasis. As the pterygium was well hidden by the upper lid it was left alone. The other clerk, whose ulcer had been much smaller and out of the pupillary area, could read 6/9(4) and 6/6 with + 1·0 Cyl. axis 90.

It is of interest that the case who refused operation took longer to settle down than some of the others—although the perforation was small and had occurred in a clean eye. Small peripheral adherent leucomata rarely give rise to trouble, but it is probably wiser, in view of the good results of excision with conjunctivoplasty, to operate in most cases of this type.

Duke-Elder (1939) and Parsons (1942) advise that a prolapse of more than a few days' duration should be left alone because of the adherence of the iris to the ulcer margins. No real difficulty was experienced in mobilising the iris even in the long-standing cases. It is impossible to be definite as to the exact duration of the prolapse in each eye, four were certainly over 5 and two over 7 days from the date of perforation.

The freedom from septic complications and the rapidity with which the more obviously inflamed eyes settled down was probably due to the exhibition of the sulphanilamide (Scott and Sorsby 1942). The eight cases in which it was used looked almost hopeless. Another factor was the prevention of too early retraction of the flaps; this was helped by adequate undermining of the conjunctiva up to the fornices, by including a generous bite in the mattress sutures, and by immobilising both eyes for as long as possible after the operation.

SUMMARY

Fifteen cases of perforated corneal ulcer were seen and treated within six months.

Patients were prepared for 2 days before operation, and those with heavy infections were given sulphanilamide by mouth.

At operation visor or double-visor flaps were used and the prolapsed iris was excised. Sulphanilamide or acriflavine was instilled, and both eyes were kept covered for 4 days.

In every case the ulcer healed and there were no septic complications.

Vision could be tested accurately in only two cases, the rest being illiterate. In both of these it was good.

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TETRA ETHYL THIURAM MONOSULPHIDE IN THE TREATMENT OF SCABIES

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DEPUTY MEDICAL OFFICER OF HEALTH, SOUTH SHIELDS

TETRAETHYLTHIURAM monosulphide was shown by Gordon and Seaton (1942) to be effective against the animal itch-mite notoëdres. More recently Gordon and Unsworth (1943) have examined the action of this substance and of benzyl benzoate in vitro on notoëdres and on the ovigerous female *Sarcoptes scabiei*, var. *hominis*. They confirm the lethal action on notoëdres and find a less definite action on *S. scabiei* (3 out of 9 sarcoptes survived 23 hours' exposure to 5% tetraethylthiuram monosulphide; 9 out of 10 survived 23 hours' exposure to 5% benzyl benzoate). The figures are not encouraging, but as Gordon and Unsworth point out, in-vitro tests may be of little clinical value, since the ability of a drug to destroy the parasite may depend upon previous reaction with the tissues of the host, as is known to be the case with sulphur. Clinical trials with tetraethylthiuram monosulphide in the treatment of scabies have been made by Percival (1942) and Clayton (1943), both of whom have reported favourably upon small series.

Imperial Chemical (Pharmaceuticals) Ltd. placed at my disposal supplies of tetraethylthiuram monosulphide in the form of a 25% emulsion ('Tetmosol') and a 20% cream (tetmosol cream), the latter containing also 2% of the disulphide. Immediately before use the lotion was diluted with warm water, using 1 part of lotion to 4 parts of water or 1 part of lotion to 3 parts of water—i.e., 5% or 6·25% tetraethylthiuram monosulphide. The cream was diluted 1 part of cream to 3 parts of water—i.e., 5% tetraethylthiuram monosulphide.

The cases treated were children, almost all of school age—no adults or infants are included. All were treated as outpatients at a clinic devoted entirely to scabies. All treatments were carried out at the clinic by two experienced workers. The course of treatment is:

A hot bath and thorough scrubbing with a loofah or soft nailbrush, all crusts and scabs being removed. The patient is dried and the diluted lotion or cream applied all over the body (except face and scalp) with a paint brush. Ten minutes is allowed for the lotion to dry and the patient then dresses. The diluted cream does not dry satisfactorily, a point which is referred to later. This routine is carried out on three successive days. Patients have a clean set of underclothing on the first and last days and clean bed-linen on the first day at least. Mothers are advised to wash the discarded clothing and bed-linen in dilute 'Lysol' or the like. (Stoving has been abandoned in South Shields since the publication of Mellanby's work (1941)).

It was intended to follow all cases for at least 6 weeks after treatment, but war conditions made this impossible. The actual period of formal follow-up varied from 2 to 6 weeks and no relapse was found. The period is rather short, but later relapses would have been detected by the school nurses.

RESULTS

Known reinfections have been excluded. The 3 cases requiring three or more courses of treatment are probably reinfections, but since this was not proved, they are included. Excluding further the 2 cases not treated to completion with tetmosol 100% success was obtained in 218 cases (see table).

SHOWING RESULTS OF TREATMENT

	Tetmosol		
	lotion 1 + 4	lotion 1 + 3	cream 1 + 3
Cured in one course	89 (85%)	67 (97%)	44 (95%)
Cured in two courses	13	..	2
Cured in 3 or more courses ..	3	..	..
Transferred to other treatment	..	2	..
Total	105	69	46

The two cases transferred to other treatment were uncured after one course of tetmosol lotion 1 + 3. Supplies of tetmosol lotion had been exhausted and treatment was completed with another remedy.

This is not in itself remarkable, for cure-rates of this order are to be expected with any efficient sarcopticide where treatment is carried out in detail by experienced workers. Thus a control series of 58 cases was treated by applications of benzyl benzoate lotion on three consecutive days, the details of treatment being the same as for the tetmosol cases. Of these, 52 were cured by one course and the remaining 6 by a second course. (Single applications of benzyl benzoate lotion have proved unreliable in my hands even with inpatients.)

The particular merits of tetmosol are :—

(*a*) A 1+3 dilution can be relied upon to produce a cure in three days (97%).

(*b*) The application is painless, even upon open sores and raw areas. This is a most important matter in clinics dealing with children.

Benzyl benzoate lotion causes pain or smarting even on the unbroken skin. As Carter (1941) points out, a painful application leads to irregular attendance and default. The substitution of tetmosol lotion for benzyl benzoate lotion at our clinic produced a noticeable improvement in attendance and parental coöperation.

Unlike most sarcopticides, tetraethylthiuram monosulphide shows little tendency to produce dermatitis—2 cases in this series showed slight transient erythema, but no real dermatitis was seen. Clayton (1943) has used undiluted lotion on 15 volunteers and in 18 cases without producing dermatitis. Of the 58 cases treated with benzyl benzoate lotion 30 showed erythema or mild dermatitis.

Tetmosol cream, though effective, is not popular. The nurses find that it takes longer to apply, is "messy" and uneconomical in use, and does not dry satisfactorily upon the skin. The patients complain that it leaves the skin sticky and soils the clothes—these are the usual objections to creams.

Clayton (1943) thought the secondary septic complications of scabies were favourably influenced by dressings of undiluted tetmosol. Clearly a sarcopticide which also controlled cutaneous sepsis would be particularly useful. However, clinical impression in the present series suggested that tetmosol in 1 + 3 dilution had little action on skin sepsis and the substance appears to be without action on *Staphylococcus aureus* in vitro.

SUMMARY

Tetraethylthiuram monosulphide in the form of 'Tetmosol' lotion 1 + 3 dilution is the treatment of choice for scabies in children. It is quick and reliable (97% cures in three days). Treatment is painless and there is little risk of dermatitis.

The lotion is easily applied and economical in use; it dries quickly, is odourless and does not stain skin or clothes.

My thanks are due to Imperial Chemical (Pharmaceuticals) Ltd. for generous supplies of tetmosol, and to Dr. R. P. Liston for his ready coöperation. Special thanks are due to Nurse McPhee and Mrs. Glattbach who did the actual work.

References at foot of next column

BRONCHIAL ASTHMA
TREATED BY BREATHING EXERCISES[1]

H. I. WEISER, M D

FAILURE of the usual measures—such as specific and non-specific desensitisation—led me to treat 29 children and 12 adults suffering from bronchial asthma by intensive breathing exercises only.

The aims were: to correct the physical deformities produced by the asthmatic attacks; to restore the elasticity of the thorax which is often fixed and distended in these cases; to develop and strengthen weak body muscles, especially those respiratory muscles which were not already hypertrophied; and to prevent such secondary effects of bronchial-asthma as chronic bronchitis, bronchiectasis, pulmonary fibrosis, cardiac hypertrophy and myocardial damage. Breathing exercises also have a psychological effect, and the increase in bodily fitness restores the patient's courage and self-confidence.

METHOD

Treatment begins with massage of the chest, back and front, between the attacks; at each session massage should be continued until a skin reaction is visible. Rhythmic compression of the chest follows, carried out by the physiotherapist with the patient lying first on his back and afterwards on his side. At each compression the patient emits a hissing or humming sound throughout expiration. Blowing exercises at the spirometer follow, the patient being taught to read off and note down his own vital capacity. Later in treatment the patient carries out increasingly vigorous exercises in the gymnasium. When a patient makes a muscular effort—whether in gymnastics, when playing a game or merely in the course of his ordinary life (for instance when going upstairs)—he should make a practice of breathing out with a hissing or humming sound. No attention need be paid to inspiration, which takes place before or after the effort is made.

At each treatment session, after a few strenuous exercises the patient is allowed to rest, either sitting, or lying on his back with his knees bent. During this interval the physiotherapist compresses his chest again, and the patient hisses or hums as he breathes out. The patient counts his breaths aloud, and after the prescribed number (between 20 and 80), begins his exercises again. The rest-pauses are increased towards the end of the session, and the number and strenuousness of the exercises are diminished. At the end of each treatment the vital capacity is measured again, and it is specially important that the patient should read off and take down all measurements of his own increases in efficiency, not only the spirometer readings, but the number of strokes he pulls on the rowing apparatus and so on. Exercises should be numerous and varied so that he maintains a lively interest in them. If he is given only a few exercises, however useful they are, they become mechanical and are carried out without interest and with little success. Besides gymnastic exercises with and without apparatus he should be given lessons in boxing and ju-jitsu, and plenty of exercises for correcting posture.

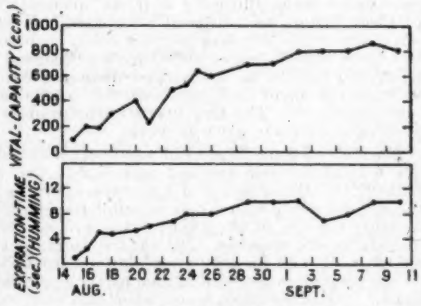

Fig. 1—Patient benefiting from exercises. Vital capacity and expiration time increasing steadily.

1. The substance of two papers read to the Jewish Medical Association, Tel-Aviv, Palestine.

DR. BRADSHAW: REFERENCES

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Children should make an early start with types of exercise which help to develop physical courage, and every boy with bronchial asthma should learn hard boxing from the age of 8 onwards, paying special attention to his expirations while he does it. He is likely to be weaker than his school-mates, and his self-confidence and courage will begin to increase from the time he realises he can defend himself effectively against boys of his own age. Adults, flabby at the beginning of treatment, soon begin to take pleasure in their increasing strength.

Gymnastics in the intervals between attacks should be lively and stimulating, and specially directed to strengthening the muscles of the shoulder girdle, back and abdomen. A gymnastic lesson should last 20–40 minutes, and at the beginning patients should be treated singly; after a few months they can form one of a small group. A course of treatment lasts 3 to 6 months.

After 2–4 weeks of treatment the breathlessness is deliberately induced in the patient by giving him several exercises in quick succession. He will find that instead of developing the dreaded attack he is able to get rid of the breathlessness quickly by concentrating on prolonged expiration. During an attack the untrained

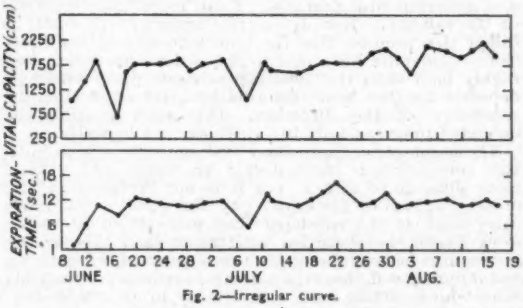

Fig. 2—Irregular curve.

asthmatic patient gasps helplessly for breath, and his air-vesicles are filled to maximum capacity. But the trained patient has learned to "breathe away" an attack: he knows that the only way to relieve himself is to concentrate on long expiration. His relations must also be taught how much the severity of an attack depends on their reaction to it. The patient is given this regime to follow at home:

1. He is to breathe out with a humming sound 5–10 times, morning and evening.
2. He should sing and whistle as much as possible during the day.
3. He is given morning and evening gymnastic exercises to do.
4. He is told that coughing is bad manners; he should avoid it as much as possible by taking several quick inspirations, making the expirations with a hissing sound.

RESULTS

The cases reported here were all cases of bronchial asthma in which no other form of treatment was given during or after treatment by breathing exercises. They have been followed up for at least 2 years after the end of treatment. Only cases in which the diagnosis of bronchial asthma was certain have been included. The results in children are given in table I.

TABLE I—CHILDREN WITH BRONCHIAL ASTHMA, RANGING IN AGE FROM 2 9/12 TO 14 5/12, TREATED ONLY BY BREATHING EXERCISES

Type of case	Cases	Effect of treatment		
		No attacks	Improved 1–4 recurrences	Little or no change
Severe ..	19	9	5	5
Moderate ..	7	3	3	1
Light ..	3	2	1	0

Severe = daily attacks lasting several hours, or status asthmaticus for day. Moderate = attacks at intervals of 4–6 weeks.

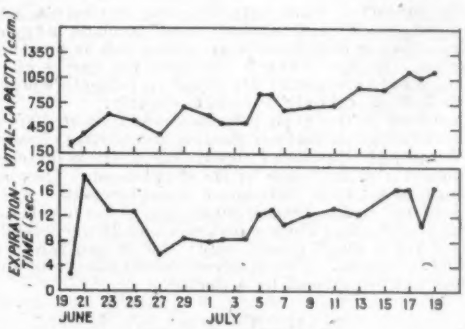

Fig. 3—Irregular curve.

Of the 29 children treated 21 had scoliosis or kyphosis and valgus deformities of the feet; 7 were fat, the rest rather meagre, though some of them were light and graceful. Six children in the periods between the attacks suffered from eczema; 8 were left-handed, 2 were pigeon-chested. Posture improved in all of them and the muscles hardened. Parents and teachers noted a better capacity for work and less nervousness in the children, even in those who showed little other change. Vital capacity increased in all 29 during treatment, and so did chest expansion. The vital capacity of these children before and after a few months of the treatment was compared with the vital capacity of healthy children of similar age and size: that is, they were within 1000 g. of the same weight and 4 cm. of the same height (table II). The figures used for comparison were obtained by the examination of 240 healthy children between the ages of 8 and 17; the same spirometer was used for these cases as for the children with bronchial asthma. In all except 2 (cases 5 and 13) the initial vital capacity of the asthmatic children was considerably below the average for healthy children; but after 1–2 months' treatment the average was usually reached or surpassed.

TABLE II—VITAL CAPACITY (VC) OF CHILDREN WITH BRONCHIAL ASTHMA COMPARED WITH THAT OF HEALTHY CHILDREN OF SIMILAR PHYSIQUE

Case	Age of patient (yr)	VC at start of treatment	VC at end of treatment	Results since treatment	VC in healthy children of same age and size
		c.cm.	c.cm.		c.cm.
1	8	650	1200	I	1300
2	9	200	1200	I	1400
3	9	650	1250	NI	1400
4	10	1150	1750	F	1550
5	10	2500	2650	F	2050
6	11	1000	2000	I	1600
7	11	1850	2200	I	2150
8	12	2100	2650	F	2200
9	13	1150	2450	NI	2050
10	13	1850	2200	F	2200
11	14	2000	2450	I	2050
12	14 5/12	1600	2100	I	2100

F = free from attacks since treatment.
I = improved. NI = not improved.

Of 12 adults with ages ranging from 17 to 69, who were treated, 4 (aged 18, 27, 28 and 40) have remained free from attacks. None of these 4 had had bronchial asthma for more than 2 years. Of the remaining 8, 2 claimed considerable and 2 slight benefit; in 4 the attacks were unchanged. Seven of the 8 had had bronchial asthma for over 10 years; 1 had had it for only 4 months. Unlike children, adults never attain the vital capacity of healthy people of corresponding age and physique, although they show an increase during treatment. The vital capacity cannot be regarded as a measure of the working capacity of the respiratory system, nor does its increase necessarily indicate a good prognosis, as table II makes clear. On the other hand, if the vital capacity shown by the patient at the beginning of each treatment, and the expiration time, measured by the period over which he can maintain his humming note, are charted as graphs, the curves give some indication of progress. Thus in the case

shown in fig. 1 vital capacity and expiration time increased steadily and regularly, and the chart is typical of those seen in patients who are doing well on breathing exercises. In figs. 2 and 3, however, the curves are of the irregular type commonly found in patients who are not benefited, or only benefited slightly.

Exercises of the type described are indicated in all cases of bronchial asthma showing a low vital capacity and cramped superficial breathing with poor chest expansion and little use of the diaphragm. They are contra-indicated in advanced bronchiectasis, severe emphysema, heart disease, pulmonary tuberculosis and febrile conditions. The method was usually unsuccessful if used for a short period only; and it can rarely be applied to infants. The exercises should always be prescribed and supervised by a doctor.

In England Now

A Running Commentary by Peripatetic Correspondents

SHAVING can be hell, but when things go smoothly the mind seems to wander quite unfettered. On this occasion, with reform in medical education and practice in the background, I was vaguely thinking about the works of the composer Trad and the writer Anon. So many of their efforts have the virtues of simplicity and originality and their very nature proves their appeal to successive generations. No plan and no organisation produced them, rather they might have smothered the germ that gave them birth. If we plan for an organisation we shall achieve an organisation. The factory assembly line, however necessary, is more than just sterile—it actually retards the development of novelty. Genius is the power of seeing things differently and it is no accident that so much really revolutionary work has been done in the field or in attics where dogmatism has less hold. According to Frazer both magic and science depend on a faith in various causal relationships which are false and true respectively. But I wonder if we realise fully how much of what we consider scientific will be relegated later to the realms of hocus pocus. Our thoughts are the product of minds canalised by approved organised tradition; hence our present misconceptions. In so far as we try to get out of the rut we shall deal in science and cease, in some measure, to be witchdoctors. For some time now I have been waiting for some astute psychologist to come out with the revelation that the current spate of detailed planning and emphasis on organisation is a manifestation of the obsessional mind, with its well-known "place for everything," which is temporarily swaying the herd just as paranoia on a national scale has flourished in Germany in recent years. The more education is organised—and life is all education—the longer will persist those fundamental errors which are inherent in our imperfect teaching. Just as there is no master race, so there is no pure teaching. In diversity we shall achieve knowledge, in uniformity we shall all fall into the same pit.

* * *

Go easy with this DDT, there's good chaps. I yield to no man in my loathing for lice, but if people start spraying the stuff about everywhere what is going to happen to the cross-pollenation of my pears and plum-trees? This year it would have been no loss if every insect in the orchard had been bumped off, for the late frost nipped the whole blooming outfit, but it will give me the DTS if next season the weather is kind and some bug-ridden householder down the road spoils the crop with his DDT squirt. Seriously though, if DDT is as lethal to all insects as it is to pediculi, oughtn't we to watch our step when we use it?

* * *

"What I most fear in this new service is being bossed by elderly doctors who have long given up practice in favour of administration." Thus said my friend and touched off an old trend of thought. It is commonly, if tacitly, assumed that there must be positive correlation between age and administrative ability; between skill in administration and salary; and between age and salary. Now the first principle of scientific research is to examine carefully one's primary assumptions. Frankly, I am more than doubtful about the validity of the three assumptions just mentioned. Administrative ability demands a knowledge of the general technique of administration as such, but also a certain amount of the technology appropriate to the subject administered. It requires vigour of personality and capacity, psychological insight in dealing with staff, and possibly to some extent a flair. These qualities are as likely to be shown by a man under 45 as over it, and indeed the vigour is certainly more likely to be found at the lower age. Then it is not justifiable to assume that administrative capacity *necessarily* increases with age and that only older men should be administrators. This is however the general practice. A single example must suffice. One of the most brilliant laboratory workers in the country, now comfortably over fifty, has been put on so many committees of his university and of Government departments that he has not even time to teach his professed subject, far less continue the researches which have contributed so much to human knowledge and welfare. Doubtless his advice to these various bodies is both valuable and appreciated, but I have no evidence that his administrative ability is as great as his worth as an original investigator and as a leader of a research team. The assumption that administrators are much more valuable than technicians is inherent in English industry and governmental practice. I am more than sceptical of its validity. But worse, the argument is made to follow this premise that the man who formulates directions—and puts his name to the order—must be more highly paid than the technical advisers upon whom he depends for his basic information and often for the substance of the direction. This may possibly be defended pragmatically but certainly not logically.

The assumption that salary and age have a high positive correlation is more deeply grounded and a little more difficult to attack, but it is not inviolable. The present agitation for equal pay for equal work must carry with it the corollary that more work or better work should be rewarded with more pay. Hence the young man who is doing his full share and a bit more, and doing it well, deserves a greater recompense than his elder who is sitting back comfortably in an administrative chair and doing much less. True the elder man takes the grave responsibility of making decisions; true he is now receiving the reward of past labours (or persistent string-pulling). But do the conservatism and caution which grow with the years (and which are of real value) entirely offset the lively enthusiasm of the younger man who is unafraid of making mistakes? And I am not contrasting a wise appreciation of a problem with rash judgment. Then the young man should be properly paid when he most needs the money to set up a home and when he can enjoy it. One of my most admired professors retired at sixty-five and took his wife on a world trip. On his return he told me how greatly he had enjoyed it and added "But how much more we would have appreciated it before we were thirty! And how much more I'd have learnt. Laddie, take your wife on your travels while you are still young enough to get the best out of it."

It would not be difficult to devise a workable and equitable scheme. I believe a common practice of the Jesuits (whose organisation is among the best devised that the world has ever seen) is to appoint one of the Society as, say, principal of a seminary for a limited period of years, at the end of which he reverts to his previous lower rank. This is not a demotion carrying even the hint of censure, but a transfer to other duties. More general application of this scheme will be readily apparent. Lest any think this but the ebullience of the early twenties, I would have them believe it is the objective examination of the status quo by one well into the older bracket.

* * *

Some Victorian novelists were apt to enjoy bad health vicariously, in their characters. The favourite maladies were "consumption," "brain fever" and insanity. Mrs. Henry Wood makes great play with all these for her main themes and persons, but she will also give a fleeting glimpse of the ailments of a lesser character. In *St. Martin's Eve* we read the following example of clinical interest:—"... Did you find all well at home?" "Quite well. Mary Anne has the mumps; but she is subject to them. I told her to lie in bed and rub hartshorn on her face."

Special Articles

The Testament of a Dean

LORD MORAN
PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS

IT is a platitude that the efficiency of the medical service which the Government is planning must ultimately depend, partly on the training of the medical student, but mainly on the quality of the man whom the service attracts into the profession. The kind of recruit who joins the medical schools is decided, in turn, not only by the appeal which the life of a doctor makes to youth, but also by removing any financial barriers which have up to the present time shut out so many would-be recruits. I had occasion recently to broadcast on medical education and began by asking a question: did your boy ever think of becoming a doctor? My question brought answers from all parts of the country; the appeal for help was overwhelming.

So the Royal College of Physicians, in its recent report on medical education, argued that all university education should be free. This is not a very revolutionary step. It has indeed been taken by some Scandinavian countries. Further, at present only about one-third of the cost of university education in Great Britain is recovered in students' fees; the remainder is provided by the state, by local authorities and by endowments. Selection of the entry is only possible if the men who wish to enter a medical school every October considerably outnumber the vacancies in that school. It remains to be seen what will be the effect of the Government's proposals for a health service on the kind of man who seeks to enter the profession, but we can, at least, ensure that no suitable applicant is frightened away by the expenditure he will incur.

* * *

Who will select the entry? I have no doubt this will be entrusted to a committee in many schools. But in my judgment no committee can carry out this task efficiently. It is the Dean's job. If he cannot do it, he ought not to be dean. This brings me to the importance of that office attracting the kind of man who makes a great headmaster; for that is in effect what the dean is. For many years, if I may be forgiven a personal note, I gave up three parts of my working day to the duties of a dean. For this I received every year an honorarium of fifty pounds. Deans, like headmasters, must be rewarded adequately. It should be a great office of the state, a prized appointment. Before the war there was increasing difficulty in many schools in persuading the right kind of man to accept the onerous duties the post entails. Give me the choice of a school's entry and anyone who likes can have the rest. A dean can make or unmake a school. If he has the fortune to rebuild his school he will be remembered for ever for this paltry feat of organisation. His achievement should be assured, not in bricks and mortar, but by his policy—and he often is innocent of any educational aims—and by his success or failure in filling his school with exceptional men.

I have no faith in examinations which seek to pick out men who might be rewarded by a scholarship. Many boys develop too early and in a year or two dry up and are heard of no more. Moreover, in my experience, any attempt to forecast what kind of a doctor a boy of 18 will make is full of pitfalls. At any rate this is true as far as his capacity is concerned, though it should be possible to judge character with more assurance. Here a word of warning is needed. Those who are sensitive to public opinion will be well advised to leave selection to a committee, unless the choice is decided by an entrance examination. For many years I deliberately followed a set policy: to accept for admission to my school only boys singled out by their headmasters for some small gift of leadership, boys already stamped by the hall-mark of what we call character. The headmaster's report was checked by an interview.

The policy came in for much criticism, but I am quite unrepentant. We accept altogether too readily boys as medical students. The dean ought to be in a position to reject unsuitable applicants. He should not accept doubtful starters to swell his entry. He must try to know something about most of his students and a good deal about some of them. This means that he must give up all his time to his task, though this may exclude from the office of dean many well fitted to discharge its duties. But in time I hope that the office will earn a prestige which it does not now enjoy, that we shall speak of great deans as we now talk of great headmasters. To the man who has the shaping of the fluid mind of youth is given a grave responsibility. To aim at success in a profession is right and proper, but the dean's work is a vocation. It can only attract a rather unworldly type. Some men can talk to students, twenty years their junior, so that they feel he is one of themselves and open their hearts to him. Others can never remember a man's name. He is a person only to be taught; his strength and weakness, his aims and aspirations, are hidden from the teacher. The student is seen from two different angles: in one he is a human being full of the soaring plans and heady views of youth, in the other he is just one of a crowd without personality. I hold that teaching worth the name means that the teacher knows his students.

* * *

If I am pleading for a new conception of the office of dean I am as certain that the training of students needs revision. When giving evidence recently before the Goodenough Committee, I expressed the view that we need for this reformation new teachers, new examiners, new textbooks. A member forthwith interjected "that would take years." Of course it will! We owe much to the clinical teachers who have given us a system of bedside teaching which is known over the world. Now more is needed. The physician may talk on a man with cirrhosis of the liver, he "rags" the students about the differential diagnosis. But he may pass on to the next bed leaving the student wondering why the fluid is there at all. We have allowed the curriculum to grow unwieldy. The student's time is taken up in memorising a mass of facts; whereas we ought to educate him, to bring out of him any critical faculty he may have, to persuade him to reason about things for himself. There should be an explanation for everything as far as knowledge permits. A teacher who cannot stir the curiosity of a student is no teacher at all, and his deadening influence may numb the questing eager mind of youth.

We might make a beginning by the elimination of unnecessary detail: facts the student must have, but they are a means to an end and ought not to become the end of study. Take anatomy. The committee of the Royal College of Physicians were assured by some anatomists who have done more than most to advance the knowledge of this subject that much topographical detail should be cut out. The anatomical world, in England at any rate, seems to be prepared and indeed anxious for drastic cuts in this undergrowth of detail. They see clearly that it is of no practical value to the future doctor, that its educational function is negligible. It crowds out of the student's mind aspects of anatomy and physiology which must be thought about to be understood. Anatomy ought to be more closely related to the living and not chiefly a study of the dead. The diaphragm, for example, was presented to many of us as a sort of shield punctured by a number of holes

at different levels, and it was our task to memorise those levels. Years later, when I first saw a patient with diaphragmatic paralysis, the dramatic happening seized my mind.

There is a dearth of able young men taking up anatomy and physiology and pathology—of all the basic sciences this is true—and nothing can be done without the teacher who thinks for himself, who asks himself what he is trying to do, and then goes and does it. These men must be fittingly rewarded, and there are signs on all hands that this is recognised. The financial support of medical education is, I believe, entering a new phase. The schools will no longer be starved.

We want boys sent to the medical schools who are educated in the strict sense of that word. Early specialisation has done grievous harm; many students cannot write English. Let no boy leave school before 18 years of age. The last two years at school are worth all the rest, the boy grows like grass after rain.

In the clinical years we are no longer dealing with a purely educational problem, we have to train men to practise a craft. Nevertheless, at bottom the shaping of the student depends on our educational ideals. He must be able to think for himself when he is no longer within our walls. That is the only way of safety, alike for himself and for the public. All the harm that has been done has been due to this idea of protecting the public from the young doctor's ignorance. He will not be made safe by stuffing him with facts. We have to awaken the power to reason, to criticise, to appraise, which lies dormant in most students. If we fail in this we fail in everything.

* * *

And now I must confess my sins. It seems difficult to find time in these war years to write. Late last night I received a telegram telling me this article must go to press tomorrow. I rose before the Italian sun made Naples a sweltering place. But my time had gone before I came to the clinical years. If, however, I ask indulgence for the hasty presentation of the views here expressed, they are at least the outcome of years in which I have thought much about the education of the student. The future is full of hope. The country at last has grasped the importance of the subject and its bearing on their own health. But the thinking man is a lonely creature, and everything depends on attracting into medicine the small minority who do not allow themselves to be hurried out of thought by the consuming demands of the day's routine.

Naples, Aug. 17.

THE WOUNDED FROM NORMANDY

II. EVACUATION BY AIR

(FROM A SPECIAL CORRESPONDENT)

HAVING got to bed about 1.0 AM after seeing wounded arriving by hospital carrier, I rose again about 6.0 AM to go on a further stage of my journey to the centre for air evacuation of wounded. The times are mentioned not to indicate my own hardihood but because they are the kind of times which all concerned with the evacuation of wounded have to keep. The pressure of work is greatest at the moment of arrival and onward dispatch of a convoy, whether by sea or air. But there are long hours when the telephone rings more or less continuously and when every kind of inquiry has to be answered and every question given an authoritative answer.

Yet there are compensations. My morning journey to the Medical HQ of the Command to see the DDMS was through some of the most perfect scenery in the British Isles. To see training areas, reserve areas, experimental areas, this unit and that unit, to meet formations of men on the roads, to see tanks, planes, motor transport, many types of landing craft, camouflaged camps and uncamouflaged huts, and more and more men, and more and more equipment of every kind, is to see a little corner of the might of our armies at war.

FRUITS OF EXPERIENCE

CVAC and AVAC are parts of the machine by which the armies of sea, land and air move and live, and they must be seen as parts of these armies to understand the work that they do. The efficiency of our fighting machine now is based on the integration of the experiences of very many men, of all ranks, on many fields of battle in many parts of the world since 1939. The general plan of the Army Medical Services remains what it was in 1940 and 1941, but it has been modified almost out of recognition in its detail by incorporating the experience of hundreds upon hundreds of individuals.

The fabric of experience is a very personal and a very human thing. It depends on character as well as on special skill and knowledge, and in many ways more on character than anything else. The young medical officer who joined up straight from his medical school at the beginning of war, who has seen service in the East, been wounded and wangled himself back to an A1 category, brings something more than medical knowledge. The older man wearing ribbons of this war and the last, who has been on Middle Eastern and African fronts and seen behind the curtain that hides the Arab world from the West, handles a field ambulance quite differently from even the best parade-trained man who has not left this country. Then there are men who learned about air power at Andalsnes where we had none, and the men who saw our great medical formations in France in 1940 swept into the clutch of the advancing German armies. Only part of the knowledge and experience of campaigning can be woven into the common stock of army medical practice and organisation. But what a difference it makes. The Army Medical Service in France as I saw it on the British Army front in May, 1940, was an admirable thing. But "mobile" units were very heavy with many extras and the tradition of the 1914–18 trench war was all too present. Medical organisation as part of defence in depth was being discussed and planned for. But there was no armour. There were no airborne units. There was little coöperation between Army and Air Forces, because the Air Forces were in a fierce struggle for their own existence against the enemy. The Navy was, as always, supreme and superb, but its operations were not "combined operations" with the other services. And in May, 1940, the EMS in Great Britain was very well organised, keyed up to face air attack and ready for any eventuality, but not integrated with the fighting services in the way it has now become.

The conception of air evacuation of casualties from France could no doubt have been considered in 1940—perhaps it was considered—but machines did not exist, aerodromes did not exist, the aircraft production situation in this country did not permit the making of transport planes in large numbers. But above all, the integrated experience of all the services in the vast combined operation that the war has now become did not exist.

AT THE AIRPORT

Having discussed the general plan of air evacuation from Normandy I went on to see the O/C Air Evacuation Service established at a convenient point near the landing fields of the air transport planes and near the convenient rail-head from which the casualties are distributed to EMS hospitals all over this country. Being O/C AVAC involves the same general duties as being O/C CVAC, but at this stage of the war it is simplified to the extent that air attack, at least on any considerable scale, is not very likely.

The airport has its hospitals immediately adjacent where casualties unfit for further evacuation can be

given any necessary treatment, and it has room enough to hold any likely additional casualties if they arrive. One of these hospitals was a great air-force institution of the most modern style. Another was an EMS hospital in an adapted public institution very admirably and efficiently run.

The problem of air evacuation is different too from that of evacuation by sea because the casualties arrive in Dakota transport planes, whose normal carrying capacity is eighteen cases but which can take two more stretchers if necessary, as well as some sitting cases. The arrival of a hospital carrier or a larger hospital ship means the handling of several hundreds of cases at once. The arrival of one, or two or three transport planes at a time is a smaller proposition. And the arrival of planes at arranged times over the course of a day spreads the work more easily over a longer period than is possible for CVAC.

The holding of a certain number of cases at a hospital near the airport is a part of the routine. The loading of the day's casualties into an ambulance train at the close of the day is the only time when a large number of cases are handled together. The necessary transport is provided by Army medical ambulances and partly by ambulances under the control of the Red Cross and St. John.

But the times of arrival of the transport planes although arranged cannot be quite precise. Nor can it be known with certainty until after all have arrived how many cases will need to be retained for treatment at the port hospitals and how many will be able to go on. There is a further complication in that wounded of the Canadian Army are distributed not to EMS hospitals in the normal course but to hospitals directly under Canadian Army control. The net result, on the day I was with AVAC, was that although the last transport planes came in fairly early in the evening it was not until some hours later that the total number of cases for dispatch by ambulance train was known. It is only after this figure is known that the ambulance train is ordered by telephone—much as you would order a taxi in peacetime—and only after the final figures are known can the destination of the train be fixed and the allocation of wounded at the other end.

The landing of the big transport Dakotas was a beautifully neat business. They land at slow speed. The opening of a great door at the side and the off-loading of the stretchers takes only a very short time. Ambulances are waiting, the destination of the cases settled, and within what seemed only minutes the patients were dispatched to the holding hospital to wait for final transport to the ambulance train.

The type of cases carried by air were much of a muchness with those carried by sea. Transport planes do not travel at great heights and it is doubtful if there is a definite contra-indication to air transport in any special class of case. I was assured that head injuries and chest injuries travelled well. On each plane is a medical orderly to give any treatment required, but since the transport time from France is under two hours any treatment is the exception rather than the rule. Looking after the men's comfort is the chief job of the orderly. All the patients I saw were in a good state and some very lively and very pleased to be in this country.

Most British wounded are evacuated from France by sea, but the number sent by air is a considerable proportion of the total and there do not seem to be any medical reasons why the proportion should not be greater still.

HEALTH OF TRINIDAD.—The Colonial Office is to set up a committee in Trinidad to review the medical and health policy of the colony and to consider the organisation of these services. The following have been appointed members: Sir Alexander Russell, MD (chairman), Dr. George Campbell, Dr. Jesse Grell, Sir Lennox O'Reilly, KC, and Mr. L. C. Hannays, KC.

On Active Service

CASUALTIES

The following casualties have been announced:

KILLED

Surgeon Lieutenant DEREK NAPIER MCKENZIE, RANR
Captain DAVID HALPERN, MB, B SC MANC., RAMC
Captain JAMES PHILIP HEARNE, MB DUBL., RAMC

MISSING, PRESUMED KILLED

Surgeon Lieutenant GEOFFREY STANLEY DAVIS, MB LOND., RNVR, HMS *Mourne*.

WOUNDED

Surgeon Lieutenant A. W. O. YOUNG, MB LOND., RNVR, HMS *Swift*.
Lieut.-Colonel W. M. E. ANDERSON, MD DUBL., RAMC
Lieutenant G. CONNELLY, RAMC
Captain C. J. R. JACOB, MRCS, RAMC
Major HAROLD KENNEDY, MB BELF., RAMC
Captain H. I. C. MACLEAN, MB GLASG., RAMC
Captain KEVIN PATTON, MC, MB NUI, RAMC
Captain M. TAYLOR, RAMC
Lieutenant T. M. WILLIAMS, RAMC
Captain ISRAEL WINKLER, MD MCGILL, RCAMC

AWARD

Surgeon Lieutenant E. W. GUILLAUME, MB LOND., RNVR, has been mentioned in dispatches for untiring devotion to duty in services to the wounded.

MEMOIRS

Lieutenant THOMAS NOTMAN, who was killed in action last month in Italy, was the only son of the late Rev. Thomas Notman, MA, of Glasgow. Born in 1917 he was educated at Woodside Secondary School, Glasgow, and at Glasgow University, where he graduated MA in 1937. He entered the Anderson College to take up dentistry, but when war broke out changed over to medicine and obtained the Scottish triple qualification at the beginning of 1943. After holding a house-appointment at Ayr County Hospital he received his commission in the RAMC the same year. For his magnificent work as RMO at Cassino, where he was wounded, he received the MC, but he did not live to learn of his award, for shortly after returning to his battalion he was again wounded, this time fatally, while supervising the evacuation of casualties. A friend writes: "I admired Notman's quiet unobtrusiveness, his sensitiveness to the sufferings and misfortunes of others, his delight in little children and in all simple things, and his loyalty to his family." Notman liked both to play games and to watch them, and he especially enjoyed golf, tennis and running. He was fond of music and sang well.

Lieut.-Colonel THOMAS SWAN EVES, missing since the loss of HM Hospital Carrier *David* in January, has now been posted as killed in action. Born in 1884 he graduated MB at Trinity College, Dublin, in 1907 and was gazetted lieutenant in the RAMC the following year. During the last war he served in Gallipoli, Egypt and France. He was three times mentioned in dispatches and received the DSO and bar for conspicuous gallantry and devotion to duty. Eves retired from the service at the beginning of 1939 and held for a few months a retired pay appointment at Netheravon till he rejoined on the outbreak of war.

Captain SYDNEY CONWAY has been killed in an accident while carrying out his duties with the RAMC in this country. Conway took the Conjoint qualification from St. Bartholomew's Hospital in 1935 and after holding a house-appointment at the Royal Hants County Hospital, Winchester, he settled in general practice in Portsmouth. He was also honorary assistant anæsthetist to the Royal Portsmouth Hospital and worked there during the raids till he joined the RAMC in 1941. He leaves a widow and one small daughter who were evacuated to Canada early in the war. Dr. Conway was 32 years of age.

Notes and News

FOOD YEAST

Torulopsis utilis seems to have come to stay. At all events the Colonial Office has formed a company to grow it and plans have been made to commence production on a factory scale in Jamaica. The theory behind this venture is a thoroughly sound one. The yeasts are grown in a medium containing surplus molasses, crude sugar and ammonia, and, by a process of "biological ennoblement," a mixture of proteins and B vitamins is produced. The dried yeast, which may be used to enrich native diets or to supplement animal feeding stuffs, contains more protein than dried milk—but not, of course, so much fat or carbohydrate—and considerably more B_1, riboflavin, and nicotinic acid. The booklet (pp. 29, 2*s.* 6*d.*) now issued by Colonial Food Yeast Ltd.,[1] of Brook House, Park Lane, W.1, deals briefly with the nutritional aspect of food yeast, but the main part of the text is taken up with a technical description of the experimental plant in which the yeast has been grown at the laboratories of the Department of Scientific and Industrial Research, and to the plans for the factory plant in the West Indies. Drawings of these plants are given in the appendix. It is hoped that this and similar factories will enable Jamaica to find an outlet for her surplus sugar, and if the product is as nutritious and palatable as it appears to be there should be no difficulty in disposing of it. Reports on the whole have been favourable, but according to Kon and others (*J. comp. Path.* 1943, **53**, 161) diets containing large amounts of "fodder" yeast, which is probably very similar in composition to food yeast, produce rickets in pigs. One must also remember that to be a success in the postwar world such a product must be able to compete successfully with all the other concentrated and nutritious foods which might be used for animal and human nutrition. *Flora* of *T. utilis*.

University of Durham

Mr. J. H. BARCLAY has been appointed to a part-time chair of surgery in the university.

Mr. Barclay qualified in 1911, taking his MRCS and the MB Durh. with honours. He took his FRCS in 1914 and his MS the following year. During the last war he served in the RAMC and in 1919 was awarded his MD for his thesis on gunshot wounds of the chest. Mr. Barclay is on the staff of the Royal Victoria Infirmary, Newcastle-on-Tyne, and the Ingham Infirmary, South Shields, and is also consulting surgeon to Durham County Hospital.

A full-time chair which will carry with it the headship of the department of surgery at King's College, Newcastle, is also being set up. This appointment will be open to candidates serving in HM Forces, and Dec. 31 has been fixed as the preliminary day by which application should be received, but no appointment will be made until the university is satisfied that those serving overseas have had opportunity to apply. The professor will not be required to take up duties until he has been released from the Services. Applications to the acting registrar at the university office, 46, North Bailey, Durham.

Evacuation of London Hospitals Continued

During the last fortnight about 10,000 patients have been moved from London hospitals in ambulance trains to Scotland, Wales, and the northern and western parts of England. Scotland has undertaken to find beds for 4000 acute and 4000 chronic cases. A patient does not know his destination beforehand, but may send a postcard to his relatives as soon as he reaches his new hospital. Receiving hospitals supply the Ministry of Health with the names and addresses of their new patients and these are forwarded to the original hospitals as quickly as possible. To free beds for these evacuated patients and for battle and flying-bomb casualties the Minister has asked hospitals all over the country to restrict the admission of civilian patients to those in need of immediate treatment.

The First Quarter's Vital Statistics

During the first three months of 1944 the R.G. registered 184,145 live births, a rate of 17·9 per 1000 of population, the highest for that quarter since 1926. The boy/girl proportion was 1·065, the decennial average being 1·060. Births exceeded deaths by 37,941, the death-rate being 14·2, against 13·5 last year. The provisional infant mortality-rate of 58 per 1000 related live births was the lowest on record. Fourteen cases of smallpox were notified, 3 of them fatal: the three deaths and all but one of the cases were associated with the outbreak at Mount Vernon Hospital.

1. A Government undertaking sponsored by the Colonial Office and financed under the Colonial Development and Welfare Act, 1940.

University of Istanbul

Mr. W. C. W. NIXON has been appointed attached professor of obstetrics at the medical faculty.

Mr. Nixon is an old Epsomian who qualified from St. Mary's Hospital in 1927. After holding house appointments there and at Great Ormond Street, he took the MD Lond. (gold medal in midwifery) and the FRCS and became registrar at Queen Charlotte's and assistant obstetric surgeon to St. Mary's. He was then appointed to the chair of obstetrics and gynecology at the University of Hong-Kong, which he held until the outbreak of war when, after taking the FRCOG, he became outpatient surgeon to the Soho Hospital for Women and obstetric consultant to the LCC. In 1941 he delivered the Blair Bell memorial lecture on diet in pregnancy. Last February he went to Turkey as medical adviser there to the British Council, and during the last few months has done a full round of the Turkish hospitals and clinics, lecturing on various aspects of British medicine.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED AUG. 12

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1084; whooping-cough, 1444; diphtheria, 428; paratyphoid, 8; typhoid, 12; measles (excluding rubella), 1795; pneumonia (primary or influenzal), 356; puerperal pyrexia, 143; cerebrospinal fever, 52; poliomyelitis, 12; polio-encephalitis, 3; encephalitis lethargica, 2; dysentery, 127; ophthalmia neonatorum, 67. No case of cholera, plague or typhus fever was notified during the week.

Deaths.—In 126 great towns there were no deaths from enteric fever, 1 (0) from scarlet fever, 2 (0) from measles, 14 (4) from whooping-cough, 8 (1) from diphtheria, 70 (4) from diarrhœa and enteritis under two years, and 8 (0) from influenza. The figures in parentheses are those for London itself.

Birmingham reported 10 fatal cases of diarrhœa, Leeds 7.

The number of stillbirths notified during the week was 197 (corresponding to a rate of 31 per thousand total births), including 20 in London.

Births, Marriages and Deaths

BIRTHS

BARRINGTON.—On Aug. 15, at Loughborough, the wife of Flight-Lieutenant W. R. Barrington, RAFVR—a son.

CONE.—On Aug. 14, the wife of Surgeon Lieutenant C. R. Cone, RNVR, of Whitby—a daughter.

GLOVER.—On Aug. 11, at Aylesbury, the wife of Surgeon Lieutenant E. C. Glover, RNVR—a son.

GREENWOOD.—On Aug. 12, at Bishop's Stortford, Herts, the wife of Captain Kemble Greenwood, RAMC—a daughter.

MILES.—On Aug. 17, at Chippenham, Wilts, the wife of Surgeon Lieutenant Roger Miles, RNVR—a daughter.

ROBERTSON.—On Aug. 9, at Woking, the wife of Lieutenant J. A. Robertson, RAMC—a son.

ROUGIER CHAPMAN.—On Aug. 13, at Walton-on-Thames, the wife of Surgeon Commander W. Rougier Chapman, RNVR—a daughter.

MARRIAGES

MILES—LOXTON.—On Aug. 16, in London, William Ernest Miles, FRCS, to Janet Mary Loxton.

MULCAHY—WHELPDALE.—On Aug. 12, at Midhurst, Edward Mulcahy, MB, flight-lieutenant RAFVR, to Margaret Whelpdale.

NICOL—DARBY.—On Aug. 17, at Grappenhall, Cheshire, Alan Peter Mayberry Nicol, surgeon lieutenant RNVR, to Rosalind Mary Louisa Darby, MRCS.

PEARCE—KETTERER.—On Aug. 15, at Brentwood, Aubrey Noel Pearce, MRCS, to Margaret Ketterer.

DEATHS

DOVE.—On Aug. 14, William Bathurst Dove, MA, MB CAMB., formerly of Leatherhead, aged 72.

FITZ-GERALD.—On Aug. 18, at West Didsbury, Manchester, Gordon William Fitz-Gerald, OBE, MD EDIN., FRCOG, aged 72.

FRANCIS.—On Aug. 13, at West Hoathly, Sussex, Henry Alexander Francis, MB CAMB., of Wimpole Street, W.1, and Frinton-on-Sea, aged 81.

HURST.—On Aug. 17, at Oxford, Sir Arthur Hurst, DM OXFD, FRCP, aged 65.

LEYS.—On Aug. 15, at Yalding, Kent, Norman Maclean Leys, MB GLASG., DPH, formerly of the Kenya and Nyasaland Medical Service.

MARSHALL.—On July 19, in New York, Jessie Laird Marshall (*née* Robb), MB BIRM., MD NEW YORK, MRCP, DPH, aged 45.

MITCHELL.—On Aug. 19, Douglas Ashley Mitchell, MD LOND., FRCSE, of Bath.

TUDGE.—On Aug. 17, at Chipstead, Surrey, Cecil Carrington Tudge, MB LOND., aged 59.

WATTS.—On Aug. 17, in London, Ralph Reynell Watts, MB EDIN.

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THE LANCET

LONDON: SATURDAY, AUGUST 26, 1944

The Time is Ripe

FOR many years our leaders accompanying the Students' Guide have debated the shape of the curriculum, the making of teachers, and the future of medical practice. Old protests come to mind:

> "He begins his life's work as a fumbler, lacking half the tools of his trade; and he learns skill at the expense of his patients."
>
> "The first thing to realise about the curriculum is that by keeping things in we keep things out."
>
> "'I can never see how anyone can safely be asked to earn a hard living while at the same time working for nothing in a hospital, serving on committees, teaching and helping students, and having enough free time to remain a reasonable man.'"

Old proposals, too:

> "Remembering the old maxim for examination candidates—'do the easy ones first'—let us begin by introducing experience of general practice into the curriculum, and a higher standard of obstetric training among those deciding to become family doctors."
>
> "... doctors should take an increasing share in preventing preventable ill-health; and they must be properly trained to do it."
>
> "All are emphatic about the value of resident appointments and some would like such postgraduate experience to be compulsory for a man about to enter general practice."

Such destructive and constructive criticisms illustrated the new spirit growing in the profession, the belief that great changes are upon us and that the curriculum must be oriented to match them. That the Goodenough Committee[1] endorse so many of the suggestions which have reached us in the last few years implies that their well-considered recommendations will be widely supported by those responsible for training a new generation. In reading through the report it is possible to see the student of the future moving towards a place on the register, and it may be instructive to follow him along that road—at present shadowy, soon perhaps to be laid down in concrete—noting what new prospects have been opened up to him as he makes the journey.

The committee have accepted a principle as important in its way as Sir WILLIAM BEVERIDGE'S famous assumption B; they hold that:

> "... the promise of being a good doctor should be the over-riding factor in the selection of students and that unsuitability for a medical career should be the sole barrier to admission to a medical school."

Our candidate, then, must first secure a place at a medical school. To qualify for this, the Goodenough Committee suggest, he should pass a school-leaving examination in general science, English, and other subjects, including preferably another modern language and history. This examination has been proposed by the Norwood Committee to replace the present higher certificate examination. The Goodenough Committee consider that the syllabus in general science should entail instruction over the greater part of the pupil's school career, not merely the last two years of it; and that it should be devised not for medical students alone but for all students, whatever their later studies are to be. Pupils should learn general principles and methods rather than large numbers of facts, so our candidate would be spared the detailed courses in botany and zoology, chemistry and physics, which face the premedical student now: he would only have to acquire those essentials of biological, chemical and physical knowledge which ought to furnish any educated mind today.

Believing that the medical student should receive a university education the committee have recommended that non-university medical schools should cease teaching. Our candidate, then, on admission to his medical school would at once become a university student. He would begin the study of anatomy, physiology and pathology, and would go on learning something more about the premedical subjects. He would be working in the preclinical department of his own school, for the committee recommend that every medical school should provide for both clinical and preclinical training. This department would be better staffed than those our present students know, where a sparse personnel lacks recruits of the right quality, training and outlook. The committee believe that better salaries must be paid to the heads of such departments, more readerships and senior lectureships with adequate salaries must be created, and enough junior members must be appointed to give to each time for reading and research. Our student would study anatomy and physiology as two aspects of human biology, from which much of the detail had been ruthlessly cut. Teachers are urged to eliminate from the curriculum, and therefore from examinations, the "mass of detailed information, which serves only to clutter-up the student's mind and to deaden his interest in subjects that can and should make the liveliest appeal to him." During this part of his training our student will receive his first grounding in pathology, which is to be taught throughout his course. The pathology teaching centre, new-style, will embrace four departments—morbid anatomy, bacteriology, chemical pathology, and clinical pathology—each with a professor or a senior lecturer at its head, and a director in charge of the whole. Our student would again be learning principles, not details or technical methods. The chief aim through this part of the course would be to establish his belief in the importance of health in the prevention of disease. Towards the end of this period his university might be in a position to offer him a scholarship allowing him to spend an extra year in the study of anatomy or physiology before he passed on to his clinical training—possibly to obtain a science degree.

When he passes the examination which allows him to enter on his clinical years our student instead of being pitchforked into the middle of hospital life like his bewildered forerunners, will take a planned introductory course lasting at least four months, and preparing him to do his clerking and dressing with a clear head and full profit. He will find teaching better organised, too. The committee recommend that the staff of every medical school should include a whole-time professor in each of the major subjects, this goal to be achieved as suitable people become available. The professors will plan teaching work in the departments. Thus our student will still have

1. Report of the Interdepartmental Committee on Medical Schools. HMSO. 4*s*. 6*d*. See also *Lancet*, July 22, p. 119

the benefit of learning from clinicians in charge of units, but his training will be better directed. Senior clinicians will teach in the outpatient departments as well as in the wards, and our student will have the advantage of living for six months in the hospital during his clinical years. He will be taught principles and methods, with more emphasis on minor and common diseases, on tuberculosis, on chronic and infectious diseases, and on rehabilitation, than is the case now, and he will have access to the many hospitals where such cases can be seen and studied. In surgery he will be taught to recognise the common conditions, and to know their social and economic effects; he will not be expected to study detailed surgical technique. In the special departments he will learn the methods of examination needed in general practice, especially those used to investigate disorders of the ear, nose and throat. He must be able to use an ophthalmoscope, give a simple anæsthetic, know something of prevention and elementary diagnosis of dental disease, and quite a lot about the management and treatment of children who are physically or emotionally out of sorts. He will get a better training in the understanding of normal and abnormal psychology, and he will be seriously instructed in social medicine by a member of the staff whose principal interest and responsibility lies in research in that subject, and by the almoner and her staff.

His obstetric training will be much better than that enjoyed by his predecessors. Instead of sharing some twenty cases with other students, and packing all his midwifery experience into one month, his training in obstetrics and gynæcology will be continuous for six months, of which four months will be spent on obstetrics, two of them in residence in a maternity hospital or department. In gynæcology he will concentrate on the technique of bimanual examinations and on diagnosis, and he will pay much less attention than his prototype of today to the details of operations.

When the time comes to take his final examinations, the committee suggest that he should be content to sit for one only: the diploma offered by his university. At present many students qualify by the Conjoint examination and then take their university examination six months or a year later. This needless extravagance has arisen because it is usually possible to sit for the Conjoint a little earlier than for the university degree. The committee wish to make it compulsory for every student to complete the university course before sitting for any final examination; but they believe that the curriculum could be so arranged that the course was complete in 4½ years. At the end of this time, then, our student will qualify—but his name will not be put on the register. Before he is licensed to treat patients on his own responsibility he will be obliged to spend a year in resident appointments in the departments of general medicine and surgery, each appointment to last six months. Once this necessary experience is complete he will be put on the register without further examination.

So much for the student. What new opportunities for study does the committee offer to the qualified man? They look forward to a time when general practitioners will see more of their specialist colleagues, and when those who wish to become consultants receive a course of training as "specialist trainees" and are encouraged by fellowships to work abroad for a time. But this part of the report deserves separate study.

Here, then, is a framework within which it should be possible to train doctors who, if not perfect, will at least be better fitted than their forerunners to meet the demands of their time. Some may regret that no specific experience in general practice is advocated as a part of training, and some may feel that teachers of social medicine can at best hope to keep pace with the learners, as Emlyn Williams's schoolmarm had to keep one lesson ahead in Greek. But if teachers can kindle their students, students can also fire their teachers. The more the medical schools undertake to teach, the more somebody will have to learn. This Goodenough report gives a new impetus to learning.

Choosing the Student

AFTER centuries of medical teaching it is still a puzzle to spot the promising doctor in the larval stage. Deans of long standing preen themselves on summing up a young person's qualities at an interview, but statistics to check their diaconal acumen are lacking. Some attention is paid to examination results, some to school and games records, and the Norwood Committee attach particular weight to the headmaster's report. The Goodenough Committee, impressed by the machinery devised for selecting candidate's for Army commissions, would like to try out aptitude tests for medical students. Work already done in this field was discussed on March 24 at a section of the Irish Royal Academy of Medicine. Dr. R. G. INKSTER had compared the results of an industrial psychology group test with the subsequent progress of students in anatomy. The scores of 105 premedical students in group test 33 of the National Institute of Industrial Psychology were compared with their subsequent success in the first medical examination as a whole, and in the anatomy examination in particular. In the test students were required to underline the correct answers in printed questions under a fairly severe time-limit. The type of question included opposites, analogies, mixed sentences, and sentences to be completed. Passes and failures in earlier (premedical) examinations, and in class anatomy tests, were also noted and charted on graphs against the findings in the group test. Success in the group test and success in examinations were unmistakably associated; but the association was more definite in the extreme cases than in those near the average. A group of 8 students formed the tail of the class in the test; they all failed in premedical subjects and dropped out of medicine. But though it was clear that students who do well in the group test are more likely to do well in their medical course than others, it seems that the outcome is by no means certain; and class-work is more closely associated with examination results than the test score is with either. Inkster's experience was confirmed by EDHOLM and GIBSON, whose findings are reported on p. 294. They tested second-year students with Raven's progressive matrices, and found only slight correlation between test results and success in examinations: there was a much closer relationship between the candidate's performances in successive examinations. Prof. M. A. MACCONAILL mentioned similar results found among final students at Sheffield. It looks as though we have yet to find the proper aptitude tests for medical students. They may be perfected in time, if we bear in mind Prof. E. J. CONWAY'S reminder that whereas intelligence is complex, tests are relatively crude.

Students Guide

1944 1945

Medical Schools

As peace approaches the hum of postwar planning swells from the buzz of solitary bees in bonnets to the formidable drumming of the hive about to swarm. The Goodenough report foreshadows wide changes in the medical curriculum, and the medical schools are already considering their adjustments to this child of a new age and mood. Since each school has its own traditions and customs, and is as positive in its tastes and dislikes as the men and women who compose it, there is little danger that a sterile and stifling uniformity will settle down upon the cradle, and, like the cat of Mrs. Kenwigs's heated fancy, suck the breath of infancy. Indeed, the proposals of the committee leave ample room for experiment, for those nips, tweaks, slaps and other encouragements which bring up the baby and turn a promising brat into a responsible and civilised creature.

At OXFORD UNIVERSITY, for example, there is a plan to develop an undergraduate medical school which aims to provide "teachers, investigators and consultants rather than general practitioners." The students would be a small specially selected group, receiving much individual instruction, with emphasis on the scientific approach. Thanks to the many gifts of Lord Nuffield Oxford now has a vigorous and relatively large medical school. Before the war students usually took their premedical subjects at school, and their preclinical subjects at the university, coupled with a BA degree usually in physiology; they went elsewhere for their clinical experience, usually to one of the London schools. During the war years, however, the university has been offering clinical experience to a proportion of its medical students at the Radcliffe Infirmary, and it is a development of this plan which is now contemplated. The Goodenough Committee favours the suggestion, in the belief that the experiment is bound to be enlightening, and that the university has an opportunity to plan the whole course of medical training afresh, from the foundations upwards.

For the UNIVERSITY OF CAMBRIDGE the committee see a different opportunity. Here it should be possible, they believe, to develop a special type of postgraduate medical school, and they suggest that research and training units might be formed in experimental medicine, radiotherapy and psychiatry. Meanwhile the undergraduate medical school at Cambridge follows its war-time pattern. Students take the natural sciences tripos and qualifying examinations in anatomy and physiology before going to a hospital in London or elsewhere to do their clinical course. During the war candidates for the MB degree are not required to have taken honours in the tripos, as they are in peace-time.

London Schools

LONDON UNIVERSITY bears a different relation to its medical faculty from other universities: where they have one school of medicine each, London has the twelve autonomous schools of the teaching hospitals, as well as University, King's, and Queen Mary Colleges, all of which take medical students for some part of the course. In addition, external students of the university may take their clinical training at the West London Hospital, which is not a university school.

During the past five years the university has witnessed much unusual activity among the schools: they have gone and come, surged into the sectors, flown to Wales or Scotland, to the West Country or the fens, changing their spots to outflank a capricious opponent. Like a hen who has raised ducklings the university has watched the eccentric behaviour of the brood from a temporary roost at Richmond, and has perhaps experienced a similar bewilderment. This year a new restlessness can be felt among the exiles: they are beginning to yearn for familiar wards and laboratories, for their own palatial or poky quarters, for their Cockney patients. Some have already come home, and once the whistle blows the invasion of London by its future doctors will presumably be only a matter of hours or days. As it is, premedical students of University College will have returned from Bangor to Gower Street by the beginning of the new session, though second-year students of the school will still be taking their anatomy and physiology at Leatherhead. King's College, after a year with Glasgow University and two years with the University of Birmingham, has been back in the Strand since autumn 1942. Queen Mary College, which provides premedical training for London Hospital students, remains the guest of King's College, Cambridge.

All the teaching hospitals are now giving students part of their training in London, though most of them are also using the sector hospitals freely for some parts of the course. ST. BARTHOLOMEW'S MEDICAL COLLEGE still has premedical and preclinical students in residence at Cambridge, where many of them have received the hospitality of Queen's College and the privilege of using university laboratories. The clinical students are to be found at Hill End, Friern, and their native Smithfield. A preliminary course in medicine, surgery and pathology, started at the beginning of the war has now reached a high standard, and proved a great success; it will be maintained in peace-time. At CHARING CROSS HOSPITAL the whole course is now being given in London, students taking their preclinical course at King's College, five minutes walk away in the Strand. Classes are small and intimate, and every student is sure of a house appointment on qualifying. A move to a new site in Middlesex is foreshadowed for the hospital, and with new school buildings and modern hospital wards it should become a foundation thoroughly worthy of its 110 years of life. Like Charing Cross, ST. GEORGE'S HOSPITAL has no preclinical school of its own. At the beginning of the war its students were dispersed in as many as 9 different hospitals, but since 1942 teaching—apart from midwifery experience, which is gained at the West Middlesex Hospital—has been centred at Hyde Park Corner, to the satisfaction of both teachers and students. The Goodenough Committee have suggested that St. George's should also carry out a plan to move after the war, and that for choice the hospital should go south of the river to an outer area of London, where hospital accommodation is much needed.

GUY'S HOSPITAL school is one of those which has come back from exile in the last year and is experiencing all the delights of home-coming. The preclinical school, which has been at Tunbridge Wells since the outbreak of war, is now fully at work in its old buildings, a return entailing transfer of 300 students and a great body of equipment. The clinical students spend half their time at Guy's and the other half at one of the Kent sector hospitals, at Farnborough, Orpington or Pembury. As at other schools, the toll taken of clinical teachers by the Forces has been heavy, especially during the past year, but hard work by students and the remaining staff have left examination results unimpaired.

KING'S COLLEGE HOSPITAL is still following the plan made during the first two years of war. Preclinical students take their course at King's College, or at a school of some other university than London. At the beginning of their clinical years they go for a period to Horton Hospital, Epsom, where they take an elementary course in clinical medicine and pathology, and later to Leatherhead for medical and surgical clerking. They also get experience at Croydon General Hospital and at King's itself, and they are seconded to other hospitals, in Croydon, Cuckfield and Hayward's Heath for courses in obstetrics, children's diseases and nervous diseases. Peace-time plans are already made, however, and will be put into practice as soon as the war ends. In contrast, the LONDON HOSPITAL has returned almost completely to the prewar plan. True those premedical students in training at Queen Mary College are still in their happy exile at Cambridge, but the preclinical students have been at home in London for the last year, and clinical students divide their time between the parent hospital and its

annexe at Brentwood. It is said that the sector hospitals are no longer needed for teaching, though students in their third year still go there as house officers, and some working at the London Hospital are able to live in nearby county council hospitals at relatively cheap rates, and to gain clinical experience there in the evenings. The students' hostel has also been opened again, and the medical college looks forward to a year of normal work. ST. MARY'S HOSPITAL students do part of their clinical work in the sector hospitals and part in London at the parent hospital. Preclinical students carry on in London. Athletic activities have been successful as usual and the hospital is fortunate in having escaped major damage. MIDDLESEX preclinical students have been back in London since 1942. The clinical students, however, are a widely travelled company; they take some of their ward appointments in hospitals at Aylesbury, Northwood and Wolverhampton, and some at the Central Middlesex County Hospital. The ROYAL FREE HOSPITAL takes only women students. Since October of last year the preclinical departments have returned from Exeter, and have been working in the school buildings in London; clinical students are still scattered over the sector. Competition for places is so keen that the council have decided to hold an entrance examination for those seeking admission. Recent damage to the hospital itself will make it easier to entertain the Goodenough Committee's proposal to move the school to the periphery. At ST. THOMAS'S HOSPITAL the casualty and outpatient departments, with 200 beds, are working normally, and students spend their final year there. Premedical and preclinical students, however, still take their training at Godalming, living at the Manor House which is run as a hostel by the medical school. In their early years clinical students work at Hydestile, Godalming, and study midwifery in several other hospitals, enjoying access to more beds than they had in peace-time. UNIVERSITY COLLEGE HOSPITAL has lately experienced compulsory evacuation of some of its wards, and teaching has been interfered with a little in consequence. Clinical instruction has been arranged in some of the sector hospitals outside London, however.

WESTMINSTER HOSPITAL has been able to open more of its London beds in the past year, but clinical students have continued to work at Staines County Emergency Hospital. The maternity unit has moved from Ripley to Walton-on-Thames. The annual intake of students is to be increased as soon as a series of affiliations with neighbouring hospitals are completed. The new school buildings are large enough to allow of expansion without further additions. During the year the library has benefited by gifts, and the students themselves have classified the books afresh. The WEST LONDON HOSPITAL, which gives preference to women, has done yeoman service during the last few years in relieving the pressure of candidates on the few London schools which at present accept women: besides the Royal Free, these are only University College and King's College, which accept less than 30 women a year between the two of them. It is a disappointment to the staff and students of the West London, and to those who have watched sympathetically the building up of an able and successful small school, that the Goodenough Committee have pronounced against its admission to the University, and advised that after four or five years it should give up teaching. The committee believe that the school could not expand sufficiently on its present site to economic size—that is, to admit 100 students annually to the clinical course. The case for the small school, however, has been well set out in correspondence to these columns,[1] and may still be worth thought in the future. The West London school has never been evacuated, and has not found it necessary to make use of the sector hospitals for teaching except in midwifery, which is taught at one of the maternity units of Middlesex County Council. Entries are limited to 24 a year, and the school can accommodate about 60 students at a time.

Other English Schools

The medical school of the UNIVERSITY OF DURHAM is situated at King's College, Newcastle-on-Tyne. Courses have been little affected by the war except that here, as elsewhere, students are being allowed to sit their final examination six months before the normal date. In 1942 a chair of child health was established, and the department is now vigorous; students spend three months there as ward clerks, and are thus gaining the experience of children's diseases which the Goodenough Committee regard as essential for the general practitioner of the future. In new regulations which will come into force as soon as the course is restored to normal length, the final examinations in surgery, midwifery, and gynæcology will be followed three months later by an examination in medicine and pædiatrics, and in the finals of December, 1945, and after a separate clinical examination in pædiatrics will be introduced. BIRMINGHAM UNIVERSITY * has already had a successful first experience of pædiatrics as a special part of the final examination: the subject takes equal place with medicine, surgery and gynæcology, and candidates take separate papers in it. LIVERPOOL UNIVERSITY * is carrying on as usual, and the growing opportunities for study of tropical diseases are likely to colour the outlook of the student in the years to come.

The UNIVERSITY OF MANCHESTER * has also anticipated a proposal of the Goodenough Committee: regular medical inspection of students has been carried out there since 1942, and all are Mantoux-tested. Prospective candidates—who are abundant—are interviewed and their suitability for medicine assessed on their school record and personality. No less than seven Manchester students were awarded Rockefeller studentships in 1943; the three who went to America in 1942 have now returned. At the UNIVERSITY OF LEEDS * additions have been made to the preclinical course: in the first year, students who find themselves in difficulties with calculations attend a short course in practical mathematics; and in the second year students are encouraged to read an optional non-medical subject. The range of subjects is at present restricted, and students are apt to choose those related to the medical course; but the university aims to produce graduates who are not too specialised, and plans, after the war, to provide broad cultural education in the early stages of the medical course. A course on psychology in relation to medicine has been introduced into the third year.

Applications for places at SHEFFIELD UNIVERSITY * are more numerous than ever: but indeed this is the experience of all schools and universities. The school is not overcrowded, however, and the clinical facilities are ample. Sheffield has taken part with other northern universities in a scheme whereby medical students visit the other schools in turn, and see methods of teaching over two days. This practice has been organised by the students themselves and has proved pleasantly instructive. At BRISTOL UNIVERSITY the study of ophthalmology has been stimulated by the offer of an annual prize of £15 by the Bristol City Council. It will be awarded to the student or newly qualified man who submits the best essay on the prevention of blindness due to the particular disease selected for the year by the medical board. Like many other schools Bristol has released volunteer students to help in receiving casualties from Normandy.

Other Schools in the United Kingdom

The WELSH NATIONAL SCHOOL OF MEDICINE has gone on developing even in war conditions. Nearly all candidates at the school take either Welsh or London degrees, rather than the Conjoint. Some 40 clinical students have been allotted special duties in the event of the reception of war casualties. A full-time radiotherapist, who also lectures on the subject at the school, has been appointed to direct the growing radiotherapeutic department. Deep X-ray treatment is undertaken and beds are provided for the cases treated. The present entry of students is 40–50 yearly, but plans for extending the entry to 75–100 yearly have been discussed. Much building will be out of the question for some years, and in the interim it is suggested that staff should be much increased. Two

1. *Lancet*, Aug. 5, p. 192.

* The entrance requirements for the Universities of Manchester, Liverpool, Leeds, Sheffield and Birmingham have been modified since the beginning of war; details may be obtained from the Secretary, Joint Matriculation Board, 315, Oxford Road, Manchester. Additional faculty entrance requirements may be imposed; details can be obtained from the Dean of the Faculty of Medicine in each university.

long-term plans have been put forward. Under one of these the school would be enlarged on its present site; under the other it would move to a new site, and a modern school and infirmary would be set up. This would allow for the development of dental and veterinary schools, and for growth of the school of pharmacy. The result would be a comprehensive Welsh medical centre, but the plan is costly. After the war this school, like others, is planning to provide postgraduate teaching for demobilised officers.

SCOTLAND, after beginning the war in the front line, has become quieter in recent years and has gone steadily on with medical education. At the UNIVERSITY OF ABERDEEN a feeling is developing that if instruction in the clinical years is to be continuous the existing plan will have to be modified: at present, teachers and taught both have too much to do. A chair of mental health is being established and it is hoped that the work of the associated department will be in close touch with psychological work in the hospital centre.

At EDINBURGH UNIVERSITY many developments are under consideration, but have not yet been made public. The work goes on as usual. SURGEONS HALL, the school of medicine of the Royal Colleges of Edinburgh, is a teaching body only, and holds no professional examinations of its own; it offers courses for the qualifying examinations of the Scottish, English and Irish Conjoint Boards. The school is not a part of the university, and the Goodenough Committee have recommended that, together with the other two extramural Scottish schools (St. Mungo's and Anderson Colleges) mentioned below, it should give up training medical students. These relatively old foundations have served a valuable purpose in their time, but the committee feel that they can no longer keep pace with the development of medical teaching.

At GLASGOW UNIVERSITY it has been possible to continue medical teaching on normal lines. Many of the younger teachers, like those of other schools, are on active service, and those who remain do some part-time national service. Students, besides serving in the Senior Training Corps, undertake firewatching in the university. Senior students serve as clinical clerks in EMS hospitals during vacations, and have also been appointed in increasing numbers as prequalified residents in teaching and other hospitals. At ANDERSON COLLEGE and ST. MUNGO'S COLLEGE, the two extramural schools already mentioned, there are no changes to report. Very large numbers of students pass through these schools, which offer courses in preparation for the examinations of the licensing boards and the universities.

Every final-year student of the UNIVERSITY OF ST. ANDREWS has held a resident hospital post. Hospitals have applied for many more of these clinical clerks than the dean was able to supply; and only favourable accounts have been received of their work in hospital. This year the university has reverted to the peace-time pattern in its examinations: students are taking their final examination after 33 months of clinical study instead of the war-time 30.

In BELFAST UNIVERSITY work goes on unchanged except for problems created by shortage of staff. At TRINITY COLLEGE, the University of DUBLIN, mass radiography of students was begun last year, and of 106 students examined 3 were graded as positive and 5 as suspicious; 22 had calcified hilar glands, and the rest were normal. Later examination showed 2 of the 8 suspected cases to have early active tuberculosis, and the rest were normal. Tuberculin skin tests were done on 101; 40 were negative and 61 positive. The SCHOOLS OF SURGERY, including Carmichael and Ledwich Schools, are attached by charter to the Royal College of Surgeons in Ireland. Students are admitted by competition in the preliminary examination, and the schools accept women as well as men. In the three colleges of the NATIONAL UNIVERSITY OF IRELAND—the University Colleges of Dublin, Cork and Galway—work has proceeded unhindered since last year.

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English, Scottish and Irish Conjoint Boards

THE Examining Board in England of the Royal College of Physicians of London and the Royal College of Surgeons of England examines candidates for the qualifying diplomas of MRCS, LRCP. Candidates satisfying the board's regulations in regard to the preliminary examination in general education, are eligible for admission to the premedical examination in chemistry, physics and biology, and are required to complete the professional curriculum subsequently at a recognised medical school. As an emergency measure the length of the course has been reduced from 57 to 54 months and candidates are now admissible to the last subject of the final examination after 30 months of clinical study instead of 33. The regulation permitting a candidate to enter for one part of the final after 24 months of clinical study is not affected. Some other war-time concessions have been authorised in the regulations: for example, clinical study may be undertaken at any hospital provided the dean of the candidate's school is satisfied as to the instruction available and signs the certificate of study. Other modifications will be found in the Emergency Regulations which have been published and are to remain in force until the termination of the war. Copies of these regulations, and a calendar showing the dates of examinations, may be obtained, free of charge, from the secretary to the Examining Board in England, the Examination Hall, Queen Square, London, W.C.1.

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow have an arrangement by which, after one series of examinations, held in Edinburgh, or Glasgow, or both, the student may obtain the diplomas—designated by the letters LRCPE, LRCSE, LRFPSG—of all three bodies. Candidates may work for the examination of the Scottish Conjoint Board at any of the recognised medical schools of Great Britain and Ireland. In 1938 the Triple Qualification committee of management adopted the suggestions of the General Medical Council for an extended medical curriculum, under which the course was to consist of a year of premedical work followed by a five-year medical course; but the committee have reverted to the 1937 regulations as a temporary war measure. Under these, the course lasts only five years and includes, in addition to the pre-registration examination, four professional examinations: the premedical examination (biology, chemistry and physics); the second examination in anatomy and embryology, physiology, biochemistry and biophysics; the third in pathology and bacteriology, and pharmacology; and the final in medicine, surgery, midwifery, forensic medicine and public health. Details may be had from the registrar, 18, Nicolson Street, Edinburgh.

The Conjoint Board of the Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland accept candidates for the LRCPI and LM, LRCSI and LM from most of the recognised medical schools at home and abroad. Full details of the regulations can be obtained from the registrar, Royal College of Surgeons in Ireland, Dublin.

Apothecaries' Licences

The Society of Apothecaries of London grants the LMSSA Lond. to candidates who pass in the primary examination (which is held quarterly) and the final examination. Final examinations are held monthly except in September. The minimum period of study is normally 5 years, but as a war-time measure candidates will be allowed to sit for the primary examination in anatomy and physiology after 46 weeks' study, provided that this covers a period of not less than 15 months; that is to say, the candidate can sit after four terms work instead of five, and this will save him a term on the whole course. The four parts of the final examination may be taken together or in any order. Further information may be obtained from the registrar, Apothecaries' Hall, Black Friars Lane, E.C.4.

See foot of previous column

UNIVERSITY DEGREES

Bachelor of Medicine and Surgery

All the universities in the United Kingdom offer baccalaureate degrees in medicine and surgery, conferred on the results of examination.

HIGHER QUALIFICATIONS

Those who have graduated in medicine and surgery are at liberty to seek higher qualifications if they wish.

Doctor of Medicine and Master of Surgery

Graduates holding a bachelor's degrees can take the degree of Doctor of Medicine or Master of Surgery. All the universities in Great Britain and Ireland confer such degrees. The requirements vary and can be obtained from the different universities. At the University of Durham the degree of Doctor of Surgery (D Ch) is offered in addition to degree of Master of Surgery (MS).

Master in the Science of Obstetrics and Master of Midwifery

The Irish universities grant the degree MAO. The Society of Apothecaries of London offers Mastery of Midwifery (MMSA). The degree is given on the results of an examination, held in May and November, the requirements for which can be obtained from the registrar, Apothecaries' Hall, Black Friars Lane, E.C.4.

MEMBERSHIP AND FELLOWSHIP

The Royal College of Physicians of London confers the Membership (MRCP), which is obtained by examination. Examinations are held four times in each year, and medical graduates and licentiates of the college over twenty-three years of age may sit for it. Details can be obtained from the secretary, Royal College of Physicians, Pall Mall East, London, S.W.1. Fellows of the college are elected annually at a general meeting of the college.

The Royal College of Surgeons of England grants a Fellowship to those passing the primary and final FRCS examinations. Under new regulations which became effective from the end of 1943, undergraduates are no longer permitted to take the primary examination, which is only open to members of the college and graduates in medicine and surgery of universities and medical colleges recognised by the council. Subjects of the primary examination are anatomy (including normal histology), applied physiology and the principles of pathology. To be admitted to the final examination candidates must produce evidence of having been engaged in acquiring professional knowledge for not less than 2 years after taking a recognised medical qualification. Dates of examination have been rearranged so that candidates who pass the primary examination can proceed at once to the final if they are eligible. Copies of the new regulations and full particulars may be obtained from the director of examinations, the Examination Hall, Queen Square, London, W.C.1.

Medical graduates who have been registered, or eligible for registration, for at least three years, may apply for examination for Membership of the Royal College of Obstetricians and Gynæcologists (MRCOG). Particulars of the regulations may be obtained from the secretary, Royal College of Obstetricians and Gynæcologists, 58, Queen Anne Street, London, W.1.

The Fellowship (FRCOG) is granted to Members who are judged to have advanced the science and art of obstetrics and gynæcology.

Graduates may become Members of the Royal College of Physicians of Edinburgh (MRCPE) on passing an examination, particulars of which may be obtained from the secretary, 9, Queen Street, Edinburgh 2.

The Fellows are selected annually from among the Members by the council of the college, and receive the degree of FRCPE.

Fellowship of the Royal College of Surgeons of Edinburgh (FRCSE) is granted to medical graduates who pass the required examination; particulars of the regulations may be obtained from the clerk of the College, Surgeons Hall, 18, Nicolson Street, Edinburgh.

The Royal Faculty of Physicians and Surgeons of Glasgow grants, after examination, a Fellowship registrable by the GMC as an additional qualification (RFPSG). Admission is by examination and subsequent election. The candidate, who must be a licentiate of the faculty or a graduate in medicine of a university or medical college approved by the faculty, may be examined either in medicine or surgery, as he chooses.

A candidate presenting evidence of having practised a specialty for at least 7 years may be examined in that special subject if the council of the faculty approves. A candidate may also submit original published work, and if this is of sufficient merit he may be excused part of the examination. Details may be sought from the secretary of the Royal Faculty of Physicians and Surgeons, 242, St. Vincent Street, Glasgow, C2.

Membership of the Royal College of Physicians of Ireland (MRCPI) is granted on the result of an examination, the details of which may be obtained from the registrar of the College, 6, Kildare Street, Dublin.

Fellows are elected by ballot from among the Members, and receive the degree of FRCPI.

Graduates seeking the Fellowship of the Royal College of Surgeons in Ireland (FRCSI) must pass in two examinations, a primary in anatomy and physiology and a final in surgery. Further particulars may be obtained from the registrar, the Royal College of Surgeons in Ireland, Dublin.

The Faculty of Radiologists offers a Fellowship (FFR) to medical graduates of five years standing who have spent at least one year in general clinical work at an approved hospital, have practised radiology exclusively for three years and have held a radiological diploma for at least two years. Candidates are required to pass an examination and submit a thesis. Candidates who hold higher medical or surgical qualifications may be exempted from the examinations in general medicine, general surgery or pathology. Full particulars may be obtained from the Warden, the Faculty of Radiologists, 45, Lincoln's Inn Fields, London, W.C.2.

SPECIAL DEGREES AND DIPLOMAS

The regulations for the following diplomas can be obtained by applying to the examining bodies concerned.

Public Health

A diploma in public health (DPH) is granted by the English and Scottish Conjoint Boards, and, usually, by all the universities of the United Kingdom except Oxford, Cambridge and Sheffield. Durham, in addition to the diploma, normally offers the degree of bachelor of hygiene to medical graduates of any approved university who attend courses for part I of the examination at Durham; the degree of doctor of hygiene is conferred on those holding the B Hy who submit an approved thesis and pass in an oral examination, but no post-graduate courses are being held at present.

Courses for the DPH are at present suspended at all universities except the three colleges of the University of Ireland. Liverpool University is considering a renewal of courses. The Royal Institute of Public Health and Hygiene normally holds a course, and in the coming session it will be held as usual for any candidates who are eligible for enrolment under war-time requirements.

Psychological Medicine

The Universities of London, Durham, Leeds, Manchester, Edinburgh, Belfast, Dublin (Trinity College), Ireland (National University) and the English Conjoint Board normally offer diplomas in psychological medicine. The University of London also grants a diploma in psychology, taken chiefly by social workers. The courses for the diplomas of Durham, Leeds, Manchester, Edinburgh and Belfast Universities are at present suspended. A DPM course is held annually at the Maudsley Hospital in the early months of the year; information may be obtained from the honorary director of the Medical School, Central Pathological Laboratory, West Park, Epsom, Surrey.

Radiology

The Faculty of Radiologists grants a fellowship (FFR) which has already been mentioned. The Universities of London, Liverpool and Edinburgh grant the DMR. Courses for the diploma at Liverpool University are at present suspended. The London and Edinburgh

University courses are being held as usual. This year the London Conjoint Board offers two new diplomas: one in medical radiodiagnosis (DMRD) and one in medical radiotherapy (DMRT).

Tropical Medicine

Liverpool University grants a diploma in tropical medicine (DTM) and tropical hygiene (DTH) but it is unlikely that any further courses will be held while the war lasts. The University of Edinburgh and the English Conjoint Board normally grant a diploma in tropical medicine and hygiene (DTM&H). No regular courses for the Edinburgh diploma have been held recently, and examinations for the English Conjoint DTM&H have been suspended for the duration of the war.

Gynæcology and Obstetrics

The Royal College of Obstetricians and Gynæcologists grants a diploma (DRCOG) to practitioners who have had special postgraduate experience in obstetrics. The University of Dublin also offers a diploma (DGO) for which a course is held at Trinity College and the Rotunda Hospital. The degree of MMSA granted by the Society of Apothecaries of London has already been mentioned.

Ophthalmology

Three examining bodies issue diplomas in ophthalmology—the University of Oxford (granting the DO), the English and Irish Conjoint Boards (granting the DOMS).

Laryngology and Otology

The English Conjoint Board offers a diploma (DLO) for those who have made a special study of the ear, nose, pharynx and larynx.

Anæsthetics

The English and Irish Conjoint Boards offer diplomas in anæsthetics (DA). Candidates must have special experience in giving anæsthetics.

Child Health

Diplomas in child health (DCH) are granted by University College, Dublin, and by the English and Irish Conjoint Boards.

Tuberculous Diseases

The University of Wales normally grants a diploma in tuberculous diseases (TDD) but courses and examinations are at present suspended.

Bacteriology

Diplomas in bacteriology are ordinarily granted by the Universities of London and Manchester. The course for the London University examination would normally be held at the London School of Hygiene and Tropical Medicine, but has been suspended during the war. At Manchester both the course and the examination have been suspended.

Clinical Pathology

The University of London offers a diploma in clinical pathology (DCP), for which a year's course of study is required.

Physical Medicine

The English Conjoint Board has just established a new diploma in physical medicine (D Phys Med). Candidates must have held a registrable qualification for two years, and must have had two resident appointments occupying not less than a year.

DENTAL DEGREES AND DIPLOMAS

There are schools of dentistry at the universities of London, Durham, Birmingham, Liverpool, Manchester, Leeds, Sheffield, Bristol, St. Andrews, Belfast and Dublin; and at university colleges of Dublin and Cork in the University of Ireland. Leeds grants a diploma (LDS), a baccalaureate degree (B Ch D) and a mastership (M Ch D). The University Colleges of Dublin and Cork grant a BDS and an MDS, and Trinity College, Dublin, offers a B Dent Sc and an M Dent Sc. All the other universities mentioned except London offer LDS, BDS and MDS degrees; St. Andrews offers a diploma in public dentistry (DPD) in addition. London University prepares students for the LDS of the Royal College of Surgeons. Licences in dentistry are also granted by the Royal College of Surgeons of Edinburgh, the Royal Faculty of Physicians and Surgeons of Glasgow, and the Royal College of Surgeons in Ireland.

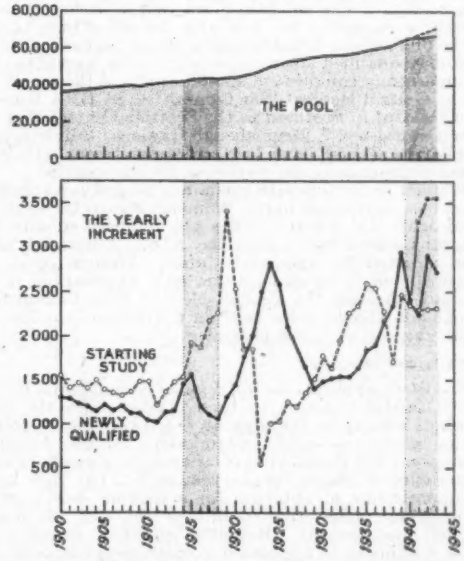
The SCHOOL OF DENTISTRY of the Royal Dental Hospital of London admits students who have passed their science examination in zoology, botany, physics and chemistry. They take courses in dental mechanics, metallurgy and special anatomy for the first two years, and during this time they also study general anatomy and physiology; for the last year the anatomy and physiology courses have been held at King's College in the Strand, as of old. For general medicine and surgery the students attend clinics at Charing Cross Hospital. There are also dental schools at Guy's, University College Hospital, King's College Hospital and the London, but the other London teaching schools offer no organised teaching for dental students; medical students of those schools, however, who wished to study dentistry could of course be credited with the general courses they had taken there.

Registration

No-one is a *legally qualified* medical practitioner unless his name appears on the Medical Register kept by the General Council of Medical Education and Registration of the United Kingdom. The council is a standardising body, ensuring that there is a definite minimum of medical education and examination requirements and it is responsible for discipline within the profession. Any application to be admitted to a school of medicine on beginning the medical curriculum proper should be addressed to the dean or other appropriate authority of the school to which the applicant desires to be admitted.

The number of students admitted to British medical schools during the academic year 1942–43 was 2302 and the GMC anticipates that the number for the current

THE NUMBERS WHO ENTER THE MEDICAL PROFESSION



year will be about the same. The quota imposed on admissions to medical schools is maintaining the numbers at this level while the war lasts. (The Goodenough Committee regard an entry of 2500 to 2600 as desirable.) The number of newly qualified has oscillated around 2500 during the war years. The part is thus greater than the whole, the explanation of the paradox being of course (1) that qualification depends on entry some 5 years earlier, (2) that it has been speeded up during national emergency. During the last three years there have been 2631 "temporary registrations," which increase the pool of medical man-power for the moment but are outside the stream of normal demand and supply. All these facts are embodied in the accompanying graph. It should also be borne in mind that (on the authority of the Government Actuary) the proportion of retired doctors is abnormally low at the present time.

The Defence Services

THE Central Medical War Committee of the British Medical Association is responsible for the supply of all doctors for the defence services, and the Central Dental War Committee for the supply of dental surgeons.

Royal Naval Medical Service

The usual regulations governing entry of medical and dental officers to the Royal Naval Medical Service are suspended during the war and the only medical officers being admitted are those granted temporary commissions in the Royal Naval Volunteer Reserve. Candidates for entry must have had at least 6 months' experience in a house appointment. After the war any vacancies will probably be filled by selection of officers from among those who have served in the RNVR during the war. A small number of women medical officers are serving as surgeon lieutenants RNVR and one as surgeon lieutenant-commander RNVR (at Medical Department, Admiralty).

Candidates for the Royal Naval Dental Service must be registered under the Medical or Dental Acts and must also have a registrable qualification in dental surgery. The method of entry is similar to that for medical officers.

Royal Army Medical Corps

No direct applications for regular commissions in the RAMC have been invited since the outbreak of war up to the present. All war-time appointments are to emergency commissions for the duration of the war; but medical officers, after serving as emergency commissioned officers for one year on full pay, now have an opportunity of applying for a regular short-service commission under conditions set out in Army Council Instructions, which are available for all officers to see in the office of the formation with which they are serving. Recently qualified doctors wishing to be appointed to an emergency commission should apply to the secretary of the Central Medical War Committee, at BMA House; or if resident in Scotland to the Scottish Central Medical War Committee, 7, Drumsheugh Gardens, Edinburgh 3. Applicants should have held an appointment either as house surgeon or house physician for six months.

Women medical practitioners are needed for appointment to commissions in the Women's Forces for employment with the RAMC. They are required mainly for general medical duties with the ATS. A number have been selected for specialist duties. Women must be under 46 and fit for general service. Applications must be made through the Central Medical War Committee. Applicants should have held an appointment either as house surgeon or house physician.

ARMY DENTAL CORPS

No direct applications for regular commissions in the Army Dental Corps have been invited since the outbreak of war up to the present. All war-time appointments are to emergency commissions for the duration of the war; but dental officers, after serving as emergency commissioned officers for one year on full pay, now have an opportunity of applying for a regular short-service commission under the conditions set out in Army Council Instructions. Recently qualified dental surgeons wishing to be appointed to emergency commissions should notify the secretary of the Dental War Committee, at 13, Hill Street, London, W.1, or, if resident in Scotland, the secretary of the Scottish Central Dental War Committee, c/o the Department of Health for Scotland, Edinburgh, 1.

Women dental surgeons are eligible for appointment to commissions in the Women's Forces for employment with the Army Dental Corps. They are employed on dental duties with the ATS, and must be under 46 and fit for general service. Applications must be made to the secretary of the Central Dental War Committee.

Royal Air Force Medical Branch

Commissions in the medical branch of the RAF are now given only to those appointed to the Royal Air Force Volunteer Reserve for duration of the war. Short-service and permanent commissions are in abeyance.

Newly qualified medical officers are considered for service in the medical branch of the Royal Air Force after having completed six months' house appointment in a civil hospital. No appointments to commissions are made direct by the Air Ministry; candidates must register with the Central Medical War Committee, which allocates doctors for interview and medical examination at the Medical Directorate, Air Ministry. Entry of doctors to commissions is normally in the rank of flying officer (corresponding to lieutenant in the RAMC) and promotion to flight lieutenant is automatic after one year's service provided recommendation for the rank is satisfactory. There are from time to time a limited number of vacancies open to doctors holding specialist qualifications, and in selected cases a higher rank on entry is given. Medical officers on entry are given a short course of instruction at the Medical Training Depot and on completion of the course become available for posting. Such postings may be to operational units, training units, recruiting centres, general hospitals and station hospitals. In addition to ordinary general medical work, there are the important branches of aviation medicine and general preventive medicine and hygiene. Medical officers are encouraged to make a special study of these.

There are now 99 women medical officers commissioned for duty with the RAF as medical officers. They are mainly employed in the care of WAAF personnel.

There is a separate dental branch of the RAF, and dental officers are not appointed to the medical branch. During the war dental officers are being appointed through the Central Dental War Committee, which has been organised by the British Dental Association. Entry into regular service has been suspended and all accepted candidates are at present commissioned in the RAF Volunteer Reserve for the duration of the war. There are 24 women dental officers now serving.

Home Guard

The Home Guard already begins to see itself in an attitude of valediction. The HG medical service has suffered discouragement during the last year and preparations have fallen rather flat, since the enemy cannot now be expected to reach our shores, except in captivity. However, medical officers have been ready: they have trained many thousands of men in the arts of stretcher-bearing, first aid, and abstention from too much first aid. This work has had an educational value which will not be lost when the war comes to an end. Nor has the service been barren of other rewards: men and officers have worked on a basis of cheerful friendliness and coöperation, and many a doctor has reached the rank of major, or even of lieut.-colonel, who had thought himself too old for more military service. There is not much new to be said about the work. Direct control by the RAMC has increased, and this, together with the fighting on the other side of the Channel, has been responsible for some alterations of posts and policies. Apart from these, the Home Guard has followed accustomed lines in training and exercises, though with a closer approach to realism than in the past.

Health Services at Home

EMERGENCY MEDICAL SERVICE

DURING the last year the EMS has developed to meet new and important needs. Since D-day the hospitals of the service have been receiving casualties, and civilian work has inevitably been interrupted to some extent. In the early days of the invasion, before military medical units could be established on the Continent, the wounded who came back had only received such treatment as could be given on the field or on the ships which brought them back. Some EMS hospitals had to be ready to act as casualty clearing stations, while those further inland became base hospitals. The most seriously injured men stayed in nearby hospitals; and hospitals within a few hours' journey by rail or road received the rest to start with. All cases were examined and any treatment considered necessary was given at once. A continuous service of ambulance trains took those who were fit for the journey to hospitals in the Midlands, the North and Scotland.

The first hospitals had to be steadily emptied in order to make room for new cases; so that only those who were unfit to be moved were left there. This has meant day and night service in these hospitals, with a great increase in medical, nursing and domestic staff, and in operating facilities. Convoys reached the base hospitals by rail at any time, so that these too have needed bigger staffs in order to deal quickly and well with the wounded.

The staffs of many of these EMS hospitals had been thinned by the calls of the Services and industry; they had in fact a relatively large number of unstaffed beds. This made it necessary to cut down work in civilian hospitals, so that they could release staff to service in the hospitals taking casualties. They were asked by the Minister of Health to limit their admissions to urgent cases and to aim at reducing their occupied beds by half. In order to supply the first hospitals alone it was necessary to transfer about 1000 medical officers as well as nurses and students from their usual hospitals—mostly from the London sector hospitals.

Within two or three weeks of the start of the invasion casualties had been admitted to EMS hospitals; meanwhile military hospital units had been established in France and were working well enough to lessen the urgency of cases arriving in this country. It became possible to relieve the strain on the civilian hospitals, which gradually resumed their normal standards of work as staff was released to them. Air transport was already bringing increasing numbers of wounded to inland air-fields, and hospitals near these are now acting as casualty clearing stations, keeping the worst cases and sending the rest to neighbouring base hospitals.

Naturally these plans affected the teaching hospitals and their students. Because admissions were limited there were fewer patients to teach on; and the transfer of surgical teams and medical staff to other hospitals deprived the schools of many of their remaining clinical teachers at an important point in the summer term. At the request of the Ministry, the deans of the schools freed students to help in receiving casualties: and very useful they were, serving not only in hospitals but on ambulance trains. They gained valuable experience in recognising and treating shock, and in giving transfusions. Supplies of penicillin, mainly from the United States and Canada, had been allotted by the Army to the EMS hospitals for the treatment of Service patients. To enable them to use these supplies effectively courses of instruction were given to surgeons, pathologists and students by the penicillin clinical trials committee of the Medical Research Council. Thus the best possible use was made of opportunities for special experience, and medical education was interrupted as little as possible.

Apart from the lean period described, the hospitals in the Emergency Scheme have suffered little change during the year. Clinical teaching has gone on in them as usual; and with the arrival of convoys of sick and wounded from the various theatres of war, and their distribution to hospitals and special centres throughout the country, there has been an increase of long-term cases for investigation and treatment, including cases of tropical diseases, particularly malaria. Two special centres have been founded to deal with the rarer tropical conditions—one at Queen Mary's Hospital, Roehampton, and the other in association with the Liverpool School of Tropical Medicine.

Beds have been increased at special centres, especially those for injuries to the peripheral nerves and the spinal cord. Rehabilitation departments have been developed and vocational training has made it possible to settle men back in civilian life. Students have had the opportunity of watching and sharing in these developments.

INDUSTRIAL MEDICAL SERVICES

THE stimulus which war gives to industry has brought industrial medicine actively into the service of the country, for output depends on the health and wellbeing of the workers. Moreover, the service will continue to grow in peace-time, for its value is being demonstrated year by year.

Factories.—Of the departments supervising industrial health the oldest is the Factory Department, formerly of the Home Office, since 1940 of the Ministry of Labour and National Service. This department administers the Factory Act with its regulations on accident and sickness prevention, hours of work, amenities, first-aid and ambulance rooms, and canteens. It is staffed by 14 whole-time medical inspectors of factories who investigate conditions of work in factories; they are stationed in London, Bristol, Birmingham, Sheffield, Manchester, Liverpool, Leeds and Glasgow. Under them nearly 2000 general practitioners give part-time service as factory surgeons, examining all young entrants into industry, and periodically all those engaged in dangerous processes, and they issue certificates under the Workmen's Compensation Act for scheduled industrial diseases.

Coal-mines.—The mines medical service, described below, is responsible for the health of miners.

Pneumoconiosis.—The silicosis and asbestosis medical board consists of 11 whole-time doctors, stationed in Swansea, Cardiff, Stoke-on-Trent, Manchester and Sheffield. They have special experience of chest diseases, and issue compensation certificates to workers who develop silicosis or asbestosis; they also examine workers in industries liable to produce these conditions. A separate board consisting of three doctors was set up in Manchester in 1941 to supervise cotton-workers who develop byssinosis, and to issue compensation certificates. All workmen's compensation schemes come under the direction of the Home Office.

Factory medical officers.—Before the war the practice of appointing whole-time or part-time works' medical officers was not universal; there were only about 50 whole-time and part-time medical officers in factories throughout England, Wales and Scotland. But partly as a result of the Factories (Medical and Welfare Services) Order, 1940, made by the Minister of Labour and National Service, there has been a considerable increase in the number of works' doctors. This order states that the occupier of a factory at which any work for the Crown is being done may be required by the chief inspector of factories to appoint doctors, nurses and welfare supervisors, to look after the workers. In April, 1943, there were 164 full-time and 673 part-time medical officers in Great Britain, and presumably the numbers have increased since then. Some of these are working in Royal Ordnance factories, under the Ministry of Supply.

Many of these war-time appointments are likely to become permanent after the war, since employers who experience the benefit of a well-run medical service in a factory rarely abolish it. Unfortunately most of the workpeople in this country are employed in small factories to which no doctors have been appointed. If a comprehensive medical service is introduced, the industrial medical services will presumably be incorporated in it, and it may be possible to appoint medical officers to groups of such factories. At present works' doctors hold appointments mainly in the larger factories and are paid by the employers. Such a doctor appears to some of the workers as the employer's man, and they are apt to distrust his opinions in consequence. Under a comprehensive medical service it should be possible to arrange that the doctor is employed by the state or some other neutral body.

Medical officers of factories who are interested in social problems have wide opportunities for their study, and can also undertake the teaching of health and hygiene. They can strengthen the bonds between the factory service and the general medical and hospital services, treat accidents, reduce the chances of sepsis, follow up serious cases, and ensure that patients all return to work in the shortest time compatible with adequate treatment and rehabilitation. By reducing the loss of working-time they are doing valuable war-work.

The Association of Industrial Medical Officers was formed some years before the war by doctors interested in the various aspects of industrial health. Branches have been established in various parts of the country. Information about the association may be obtained from the secretary, Cadby Hall, Kensington, London, W.14. The new *British Journal of Industrial Medicine* is sponsored by the AIMO in conjunction with the British Medical Association.

Postgraduate training in industrial work is as yet poorly developed, but week-end courses are provided from time to time at London, Birmingham, Manchester,

Sheffield, Leeds, and Bristol. Research on factory environment is carried out by the industrial health research board of the Medical Research Council. The council has appointed a director of medical research, and established a research department at the London Hospital.

PUBLIC HEALTH

THERE has been steady expansion in the field of public health since the first medical officer of health was appointed nearly a hundred years ago. In the early days the duties of the MOH were largely concerned with sanitation, especially such matters as the safety of water-supplies and sewage disposal. The work of the pioneers in this field led to the general acceptance and application of standards; as a result, the need for detailed medical supervision of environmental hygiene has been reduced, though in some rural areas there is still much to be done. The medical officer must now retain general control and supervision of the work, but he largely delegates it to sanitary inspectors, health visitors and others. So long as the general control remains with the medical officer trained in public health there can be only good in this.

Control of infectious diseases was one of the first functions of a medical officer of health; at one time the isolation of such patients was held to be of primary importance. Now the emphasis is more upon the provision of specialised treatment, so that larger hospitals with specialist clinicians in charge have developed. The MOH is now much more concerned with active prophylactic measures, such as diphtheria immunisation, though he is still often called on to advise on the diagnosis in cases of doubt, and still deals with the home follow-up and epidemic control.

During the last thirty years the emphasis in public health has turned gradually towards preventive clinical work, particularly in the maternity and child welfare and school medical services—so much so that there are now in the public health service many more doctors engaged on clinical duties than on administrative work or the control of environmental hygiene. The tuberculosis service, developed largely since the last war, covers both preventive and curative clinical work, and has led to growing provision for institutional treatment. Over the same period the treatment of venereal diseases has developed. Since 1930 counties and county boroughs have enlarged their general hospital services in institutions taken over from the Boards of Guardians. The MOH thus has an interest in general hospital administration also.

In general, senior posts in public health are now almost entirely administrative, though the medical officer of health of a small borough may have clinical work to do as well. The more junior posts include some with partly or entirely administrative responsibility, but most of them are clinical. There are opportunities for promotion in some specialist clinical fields such as tuberculosis and venereal diseases; but in the maternity and child welfare and school medical branches promotion usually means at least partial diversion to administrative work. The changes which may follow the introduction of a comprehensive national health service cannot be forecast with certainty, but it seems likely that they will tend to bring the clinic services at present provided by local authorities into much closer association with general practice and the hospital services. The maternity service would naturally be associated with the obstetric service of hospitals, and school medical and infant welfare work with pædiatrics. In this way those engaged in the clinic work would not be restricted as they may be now to the examination of children, mostly healthy, or to the antenatal and postnatal supervision of women whose confinements are attended by others. The tuberculosis and venereal diseases services must be closely interlocked with the preventive services, as must the other clinic services, but in future they are likely to form a part of the national hospital service rather than to be run as a separate organisation. Thus it seems likely that there will soon be better opportunities in clinical preventive work, and those undertaking it will not have to turn to administration in order to secure advancement. The whole-time public health medical officer will be an administrator familiar with clinical preventive work, and able to organise field investigations—for instance, on nutrition. There will also probably be many more openings for medical administrators in the hospital services.

The mode of entry to the service will probably be not as in the past through the clinical side, but through assistant administrative posts concerned with control of infectious diseases and organisation of clinic services. Thus there will be far less likelihood of medical officers who have taken postgraduate qualifications in public health devoting the rest of their professional lives to clinical work in a limited field. The very fact that those who undertake clinical preventive work will also be engaged in curative work will bring the administrative medical officer responsible for the organisation of clinic services into far closer contact with his professional colleagues.

The possession of a diploma in public health or its equivalent is necessary for anyone now appointed as MOH; this diploma is not necessary for those engaged in clinic work, though many possess it. In future, officers appointed to junior whole-time public health posts will need this background of training for the preventive and administrative work in which they will be engaged. The curriculum for the diploma is now under review, and it is probable that the revised course will provide a basic training in preventive work suitable for all, with opportunity for the later study of special branches.

LONDON COUNTY COUNCIL HOSPITALS

THE hospitals service of the London County Council provides special facilities for undergraduate instruction, and opportunities for experience for medical graduates who intend either to be general practitioners or consultants, or to enter the LCC Public Health and Hospital Service. At the beginning of the war, the service contained 97 hospitals with beds for 71,694 patients. The 97 hospitals consist of 44 general hospitals, 32 special hospitals and 21 mental hospitals and institutions for the mentally defective; 34 of the hospitals are included in the Emergency Hospital Scheme.

Treatment is provided in these hospitals for all kinds of acute and chronic illnesses, including fevers, tuberculosis, mental and nervous disorders.

HOSPITALS BRANCH

Medical superintendents of the hospitals, who are expected to be experienced hospital administrators, receive £850 to £1650 a year, in hospitals varying in accommodation from 160 to 1300 patients. In addition, medical superintendents are provided with an unfurnished house or quarters with payment by the Council of local and water rates. The other full-time medical staff are classified as follows:

Grade	*Annual salary*
Deputy medical superintendent, class I	£650—£50—£800
Deputy medical superintendent, class II	£600—£30—£750
Deputy medical superintendent, class III	£550—£25—£650
Deputy medical superintendent, class IV	£500—£25—£600
Senior resident surgeon, physician, or obstetrician, and senior assistant medical officer	£500—£25—£600
Assistant medical officer, class I	£350—£25—£425
Assistant medical officer, class II	£250
Senior house officers	£200
House-physicians and house-surgeons	£120

These officers are provided with board, lodging and washing. Clinical assistants, who are non-resident, receive £150 a year with meals when on duty. Vacancies in the higher grades are filled as far as possible by promotion from the existing staff. In addition, a large number of part-time consultants and specialists are employed in the various hospitals, as well as some whole-time non-resident specialists at a salary of £1250—£50—£1500.

A central histological laboratory and an antitoxin establishment, as well as seven group laboratories of the pathological service, serve a number of hospitals. Attached to the group laboratories are subsidiary laboratories situated in the various hospitals. Normally a medical staff of 27 is attached to these laboratories, but some of them are at present working at other laboratories under the EMS.

TEACHING FACILITIES

During the war, courses in fever hospital administration for the diploma in public health have been suspended;

other postgraduate facilities have remained as they were. The British Postgraduate Medical School is located in the Council's Hammersmith Hospital.

Patients under treatment in the Council's hospitals have not been much reduced in number, and increased use is being made of them for teaching purposes. Maternity wards of many of the voluntary hospitals have been closed, and arrangements have been made whereby maternity students have had training and experience in the maternity departments of the Council's general hospitals. Most of the students are resident and attend for a fortnight at a time. In addition, students have been allocated to a number of the general and special hospitals under the Emergency Hospital Scheme to act as dressers. The Council has agreed that medical training and experience shall be provided whenever possible; in most cases the students, some of whom are resident, receive systematic instruction from the resident medical staff of the hospital. The fever hospitals also provide for undergraduate instruction, and, when patients are available, for demonstrations in the diagnosis and treatment of smallpox for both undergraduate and postgraduate students. Students are resident during their course of instruction in some of the fever hospitals.

Most of the general hospitals are recognised training centres for candidates for the University of London MD examination; 18 of them for the diploma and membership of the Royal College of Obstetricians and Gynæcologists and for the final FRCS examination and the diploma in anæsthetics. Service at Queen Mary's Hospital for Children, Carshalton, and at St. James Hospital is recognised by the Royal Colleges of Physicians and Surgeons as a part qualification for the diploma in child health.

MENTAL HOSPITALS BRANCH

The mental health services of the LCC are responsible for a large medical service, vacancies in which are normally advertised at short intervals. No new permanent appointments are being made at present; indeed the staffs of the various hospitals have been reduced as a war measure. In peace-time those appointed to the service may be sent to any of the Council's mental hospitals and may be transferred from one hospital to another should circumstances require it. An applicant enters the service as assistant medical officer at a salary of £470 a year, rising by annual increments of £25 to £570. Salaries are graded through the various ranks to £1450 paid to superintendents of large hospitals; a superintendent is also provided with an unfurnished house on the hospital premises. Assistant medical officers may be required to live in the institution which they are serving and to pay fixed rates for board, lodging and washing. Officers contribute to a superannuation fund. They are required to take a diploma in psychological medicine within three years of entering the service and the diploma carries with it a payment, in addition to salary, of £50 a year. Promotion is reasonably rapid for men. The mental health services are actively concerned in the EMS. Three hospitals are used entirely as emergency hospitals and at eight others there is an emergency hospital section. Treatment is provided for all types of acute, medical and surgical cases, and the hospitals are staffed and equipped to give specialised treatment. The medical staff for these hospitals is drawn mainly from the emergency medical service.

MENTAL HOSPITALS OUTSIDE THE LONDON AREA

Provincial and Scottish mental hospitals are under the local authorities of the various areas in which they are situated. Posts in them offer medical officers much the same scope and remuneration as those in the LCC service. They are advertised regularly in the medical journals.

MINES MEDICAL SERVICE

THE Mines Medical Service now consists of eight regional mines medical officers, with a chief mines medical officer and a deputy at headquarters.

The white-paper on coal proposed the establishment of this service "with a view particularly to checking wastage of labour." Thus much of the work of the medical staff is concerned with applications for release from the industry on medical grounds. Before the medical service was founded all such applicants were sent by the Ministry of Labour for independent medical examination. The functions of the service have been twofold: to relieve the workman of such examination, if the medical evidence put forward by him was sufficiently conclusive; and in doubtful cases where independent medical examination is necessary, to secure a high standard of examination. These services have been of value both to the workmen individually and in helping to check unwarranted wastage of labour. But it has always been realised that these activities, essential as they are at present, are not constructive, except in that they lead to better medical or surgical treatment of the patients concerned. From the start the medical officers have been enjoined to devote all the time possible to professional activities at the mines and in connexion with the hospitals, rehabilitation centres and other institutions to which the miners go for treatment. Professional work at the mines themselves is increasing in volume. Medical officers have charge of the first-aid and ambulance arrangements both below and above ground; they study the working conditions in relation to the miners' health, and are getting a wide first-hand experience of the coal-mining community at work. Special attention is being given, and will be given increasingly, to a practical study of the causes of the so-called industrial diseases, and to measures for preventing or alleviating them. The field to be covered is wide, and previous work and experience have already shown that there are no easy roads to speedy improvement; but it is hoped to improve conditions gradually by concentrating on particular difficulties and problems. Several studies of this kind are already in hand. The use of morphia for the first-aid treatment of cases of painful injury underground, and an improved method of treating eye injuries have been introduced; a study of dermatitis as it sometimes occurs at pithead baths has been begun. The medical service is looking forward to the time when the whole of its energies can be concentrated on constructive work of this kind, and in the meantime will devote to it all the time that can be spared from dealing with the temporary problems and difficulties arising out of the war.

PRISONS

AT the larger prisons whole-time officers are appointed, sometimes with deputy medical officers to assist them. Unfurnished quarters are provided or an allowance made in aid of rent. Posts are pensionable and promotions are made as vacancies occur. Candidates with a diploma in psychological medicine receive £50 per annum more on appointment than candidates without this qualification, and are given preference provided they also have good all-round general experience. At the smaller prisons no whole-time officers are employed; local practitioners are usually appointed as part-time officers. Further particulars can be obtained from the Prison Commissioners, Kensington Mansions, Trebovir Road, London, S.W.5.

Services Abroad

INDIAN MEDICAL SERVICE

RECRUITMENT to the Indian Medical Service, which is designed primarily to meet the needs of the Indian Army, has been modified by the war, and officers are now appointed to emergency commissions in the military branch for the duration of the war. The method of recruitment of male medical officers, other than those of Indian or Dominions origin, has been altered and those wishing to be appointed are required to join the Royal Army Medical Corps first. After a course of instruction they can apply to be posted to the Indian establishment, and are then given an opportunity to transfer to the Indian Medical Service. Officers selected for transfer will be given preference if permanent commissions in the Indian Medical Service are granted again after the war. The upper age-limit for European emergency commissioned officers on appointment is at present 45.

Officers on appointment to the IMS are eligible for the grant of antedates, which are reckoned in assessing service for seniority and promotion, in respect of specified higher

School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.

Neurology.—At the National Hospital, Queen Square (B), hospital practice is available to selected clinical clerks (5 guineas for three months, 7 guineas for six months) and outpatient clinics are held each morning at 11 AM on Monday to Friday (1 guinea for one month, 2 guineas for three months). The West End Hospital (B) is continuing its teaching in the outpatient department. The Maida Vale Hospital (B) provides hospital practice and may be continuing DPM teaching if it is needed.

Heart and Lungs.—At the Brompton Hospital (B) limited hospital practice is available, and courses are held in preparation for the MRCP and Conjoint examinations. The Royal Chest Hospital (B) provides outpatient practice and special courses on heart diseases in conjunction with the Fellowship of Medicine. The London Chest Hospital, Victoria Park (B), has been re-established after the damage it sustained, and provides facilities for hospital practice in all chest diseases, including tuberculosis. It has a country branch at Camberley, Surrey.

Children.—The Hospital for Sick Children, Great Ormond Street (B), is providing limited postgraduate instruction; special consideration will be given to candidates for the diploma of child health. The Queen's (C) and Princess Elizabeth of York (C) Hospitals have suspended postgraduate teaching. Diplomas in child health are granted by the English and Irish Conjoint Boards and by University College (NUI), Dublin, where a course is now being arranged.

Maternity.—Queen Charlotte's (A) is not at present engaged in any graduate teaching since all its facilities are required for undergraduate training. The City of London Hospital (C) has been damaged and teaching is still suspended. Hospital practice in the maternity department of the British Postgraduate Medical School is available.

Cancer and Radiology.—At the Royal Cancer Hospital (A) teaching continues as before the war. Postgraduate courses are held qualifying for the diplomas in medical radiology of London University and of the Conjoint Board. The Mount Vernon Hospital (B) offers hospital practice in its hospital at Northwood; 50 beds are reserved for cancer cases and this number is likely to be increased. Additional cancer cases are received under the EMS scheme.

Ophthalmology.—The Royal London Ophthalmic Hospital (A) is carrying on as usual at Moorfields. The Central London (B) continues as usual, except that no special courses are being held. The Oxford University course for the DO is being continued.

Ear, Nose and Throat.—At the Royal National Hospital (B) hospital practice is available but no special courses are held. The Metropolitan Hospital (A) is continuing its teaching and classes on outpatients in London, but all inpatients are transferred to the EMS base hospital. Golden Square Hospital (B) provides hospital practice.

Orthopædics.—The Royal National Orthopædic Hospital (B) has suspended teaching, but the outpatient department is open to postgraduates.

Genito-urinary and rectal diseases.—The London Lock Hospital (A) continues to provide instruction for postgraduates who wish to obtain the 130 hours' instruction required by the Ministry of Health for a special certificate, and limited teaching facilities are available. Hospital practice is available in the outpatient department of All Saints (B) and St. Paul's (B). At St. Peter's Hospital (B) practice is available in the outpatient department. Special courses are held at Colindale on behalf of the Fellowship of Medicine, which makes arrangements if there are a sufficient number of applicants.

Skins.—Limited hospital practice is available in the outpatient department at the London School of Dermatology (B) and there is a regular teaching session in outpatients at the British Postgraduate Medical School on Thursdays at 2 PM.

Tuberculous diseases.—The course and examination for the diploma in tuberculous diseases normally granted by the University of Wales are suspended, and no other diplomas are available in this subject.

Bacteriology and clinical pathology.—The courses for the diplomas in bacteriology of London and Manchester Universities have been suspended. The University of London diploma in clinical pathology is not officially suspended and the British Postgraduate Medical School will consider applications for a course.

Anæsthetics.—Practical courses of instruction in anæsthesia, lasting a fortnight, are provided at the British Postgraduate Medical School (fee 3 guineas). Arrangements can be made through the Fellowship of Medicine for instruction in the department of anæsthetics at Oxford; apart from this routine teaching the department also offers fortnightly revision courses twice a year, at which graduates are given three lectures daily and attend the routine anæsthetics in the Radcliffe Infirmary.

Industrial health.—Week-end courses in industrial medicine and hygiene are provided periodically by the London School of Hygiene and Tropical Medicine and by the Universities of Birmingham, Leeds, Manchester, Sheffield and Bristol.

EXAMINATION RESULTS AND AN INTELLIGENCE TEST

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THE reports of the Royal College of Physicians (1944) and of the Interdepartmental Committee on Medical Education both stress the special importance of choosing suitable students for medicine. It is admitted that this is a matter of considerable difficulty, and it has been suggested (*Brit. med. J.* 1944, i, 665) that intelligence tests should be applied to candidates for admission to medical schools.

For the past three years, the medical students in their second year's work at Queen's University have carried out an intelligence test, using Raven's Progressive Matrices (1938). The scores obtained have been compared with examination results. The test was introduced partly as an educational measure, to interest students in some aspects of elementary psychology, and from this point of view it has been very successful and may be recommended as a useful starting-point of a course in normal psychology.

METHODS

Groups of 8 students were tested in a separate room during the practical physiology class. In the first year the test was used unlimited time was allowed. The scores obtained were closely grouped at the upper end of the scale; in the following years a time-limit of 20 min. was imposed, as suggested by Raven (1942). The students have proved coöperative, wishing to carry out the test conscientiously. They have been assured that the results of the test will in no way affect their marks in the professional examination. On rare occasions students have not wished to carry out the test, and these have not been pressed to perform it. Well over 90% of the available students have been tested. Raven (1942)

TABLE I—SCORES COMPARED WITH RAVEN'S ADULT GROUP. MAXIMUM SCORE, 60

Score	Adults (Raven)	Students		
		1942	1943	1944
		Unlimited time	20 min. limit	
	%	%	%	%
54–60	10	33	4	5
49–53	15	41	41	31
44–48	25	12	29	31
37–43	25	11	20	29
28–36	15	3	5	4
0–27	10	0	1	0
Number tested	3665	90	81	87
Mean score ..	..	52·5	46·7	46·1
Median score	44	54	47	46

A time-limit of 20 min. was imposed in 1943 and 1944, so these figures are not comparable with the 1942 figures or with Raven's 1938 figures. Comparison of the first two columns suggests that about 85% of the students tested in 1942 had a better-than-average performance in the test.

has shown the importance of these points in the interpretation of the results.

The students included 20% women ; the average age of both men and women was 19½ years.

RESULTS

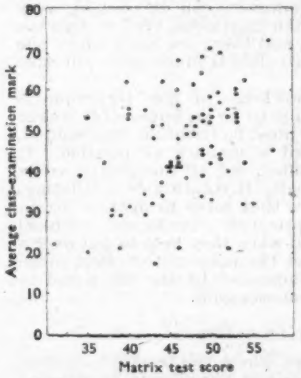
The scores obtained in the test are compared with figures taken from Raven (1938) giving data for an unselected adult group (table I).

CORRELATION WITH EXAMINATION RESULTS

The average mark in the terminal class examinations in physiology was used as a basis for comparison. The correlation coefficients for the 3 years (ungrouped data) were :

1942	..	$r = +0{\cdot}228$ $N = 90$
1943	..	$r = +0{\cdot}382$ $N = 81$
1944	..	$r = +0{\cdot}325$ $N = 77$

The value found in 1942 might have been expected to arise as a chance fluctuation once in 30 times, the other two values are highly significant. But the correlation, although significant and indicating statistically that the two sets of marks are definitely not independent, is slight. The scatter diagram for 1943, reproduced in the figure, gives a good idea of the relationship.



Scatter diagram showing the relationship between the average mark in class examinations in physiology (1943) and the number of problems correctly solved in 20 min. in the matrix test.

The relationship between the matrix test scores and the results of the first MB examination (i.e., in physics, chemistry, botany and zoology) was also examined. The attributes examined were : passing in all four subjects at the first attempt ; and being in the upper third of the year as measured by the matrix test. The probability that these attributes are independent was found to be :

1942	..	$P = 0{\cdot}034$
1943	..	$P = 0{\cdot}0044$
1944	..	$P = 0{\cdot}0002$

It is concluded that, although these attributes are not independent, the degree of association is not high, so the result is very similar to that obtained with the second year physiology results.

In view of the slight relation between the matrix test results and the examination marks, the relation between the first MB and the second MB (anatomy and physiology) examinations was considered, to see how far the results of one examination could be predicted from the results of another. The figures, shown in table II, indicate that there is a close relationship.

TABLE II—RELATION BETWEEN RESULTS IN FIRST AND SECOND MB EXAMINATIONS

Students	Examination subjects passed in 1st MB (1st attempt)	Passed 2nd MB (1st attempt)
		%
171	4	86
85	3	52
49	2	28
45	1 and 0	22

Inkster (1944) has described the results of a comparison between an intelligence test and the performance of students in anatomy. Although the test was of a totally different nature, his results were closely similar to our own comparing the matrix test and performance in physiology.

Since it might be considered that anatomy and physiology are subjects requiring rather different qualities for successful study, a comparison has been made of the marks obtained in the second MB in anatomy and physiology in the past 3 years. The means for each year have been adjusted to eliminate spurious correlation. The correlation coefficient ($N = 218$) was $+0{\cdot}87$. The standard error of estimate of anatomy mark from the corresponding physiology mark was 4·86 marks. There is thus a high degree of correlation between performances in the two subjects.

The marks in the anatomy class examinations have also been compared directly with scores in the matrix test. The results are closely similar to those obtained using the physiology mark as the basis of comparison—e.g., in 1944 the correlation coefficient was

$r = +0{\cdot}31$ (anatomy mark and matrix test)

as compared with

$r = +0{\cdot}33$ (physiology mark and matrix test).

DISCUSSION

One of the most striking and important points which emerges from these results is the high mental ability of the average medical student, as measured by the matrix test. It is clear that a fairly rigid process of selection has already been applied by the time the student reaches his second year. The median mark of 54 out of 60 compares very closely with Raven's (1941) result with university trained militiamen, for whom the median mark was 55. This indicates that the medical students of Queen's are probably representative, as regards intelligence, of medical students at other universities.

The report of the Royal College of Physicians (1944) describes the average medical student of today as lacking in initiative and curiosity, with poor ability to arrange and interpret facts, and little precision in the use of words. If we accept the statement, either unusually great ability is necessary to avoid these faults, or they are not primarily due to any lack of intelligence.

The low degree of correlation between the results of the test and examination results is, at first sight, surprising. It is probably due in part to the relative homogeneity of the group. Had the proportion of students with very poor or with excellent performances in the matrix test been higher, it is likely that a greater degree of correlation would have been found. It is evident that the test is of little value in attempting to predict the probable future performance of the individual student in examinations. It appears to be true, however, that those few students who have scored exceedingly low marks in the intelligence test do not, in general, succeed in their professional studies. They are so few that their elimination would not materially reduce the number of failures in the professional examinations.

The point of immediate importance is whether the matrix test would be of value in the selection of students for entry. The test could be applied in an attempt to eliminate the unsuitable student. In this case, to avoid the risk of failing candidates who might ultimately prove satisfactory, the minimum mark in the test would have to be set so low that very few students could be rejected. On the other hand, in order to select students who would almost certainly do well in their examinations, a very high standard indeed would have to be set. We have estimated that to reduce the percentage of failures to one half of the present figure, five-sixths of the present entry would have to be rejected. A very large number of potentially satisfactory students would thereby be excluded. We consider that while intelligence tests are not without interest in this connexion, the results must be applied with very considerable caution. In general, it is probable that the results of previous examinations form a more reliable index of results in future ones.

Although further work is required to show if our results are generally applicable, it is of interest that Inkster, using an entirely different form of intelligence test, has independently reached very similar conclusions.

We have used examination marks throughout as a means of assessing students, on the grounds that such marks are relatively objective and other methods of

medical qualifications (six months or a year) or approved whole-time hospital appointments (maximum a year), the antedating in these cases being limited to a total period of 1½ years. Antedating equivalent to half the period spent in practice, less the period granted in respect of hospital appointments, is also allowed up to a maximum of 5 years. All previous full-pay commissioned service with the Armed Forces as a medical officer also counts towards rank and seniority on transfer.

Qualified officers selected for specialist posts are granted appropriate temporary rank with the pay and allowances of the appointment. Passages to India are not granted to wives and families; but if, on the termination of his service, an emergency commissioned officer elects to reside in India, he can be allowed the cost of transport of himself and his family to the place where he wishes to live.

The pay of a European lieutenant in India is £585 per annum and of a captain on promotion £750 per annum; on his release an emergency commissioned officer receives a minimum gratuity of Rs.2000 if his date of registration as a doctor was before Jan. 1, 1940, or Rs.1000 if registered on or after that date, provided he completes a year of service; he gets an addition of a month's pay for each further year of Army service. If invalided out for a disability due to service he receives disability retired-pay appropriate to his rank and degree of disablement, which for Europeans is as for officers of the RAMC. If he dies as a result of military service during the war, provision is made for his widow and children.

Women medical officers are appointed direct for service with the Indian Medical Service by the Secretary of State for India under conditions similar to the above, and a small number have already been appointed from the United Kingdom. Full information regarding these appointments and those available for Indian medical officers, for whom the age-limit is 40, may be obtained from the Secretary, Military Department, India Office, 4, Central Buildings, London, S.W.1.

The Indian Army Medical Corps which has recently been formed, is organised on similar lines to the RAMC, and has received by transfer the whole existing personnel of the Indian Medical Department and the Indian Hospital Corps. All regular commissioned officers of the Indian Medical Service in military employ as well as emergency commissioned officers of that Service are seconded to the IAMC but retain their IMS privileges.

WOMEN'S MEDICAL SERVICE FOR INDIA

Admission to the service is by selection in India and England. Appointment is open to English and Indian qualified women. Vacancies are few—usually only 3 or 4 in each year, and there is little recruitment from England. There is also a training reserve of qualified women recruited from Indian universities. Since the outbreak of war no members of the training reserve have been sent to England for postgraduate study. Leave out of India has also been restricted and vacancies in the service are being filled by doctors in India as need arises. The office of the Dufferin Association in London is closed for the duration of the war, and the post of medical adviser is in abeyance. Those seeking information about the Association should apply to Miss C. L. Houlton, FRCOG, SPG House, 15, Tufton Street, London, S.W.1.

During the war women medical officers are appointed direct to emergency commissions in the Indian Medical Service by the Secretary of State for India, under conditions similar to those for men, as noted above.

COLONIAL MEDICAL SERVICE

The Colonial Office is anxious that young doctors should realise that recruitment for the Colonial Medical Service at the present time has been officially approved and that service in the Colonial Empire is of as much national importance as service in the Forces. Vacancies occur most often in the larger medical departments in tropical Africa. Specialist appointments are usually reserved for officers who have shown outstanding merit in a particular branch of medical practice. Vacancies may arise for women with experience in maternity and child welfare work. Selected candidates are generally required to attend a course in tropical medicine and hygiene, before going overseas or during their first leave period. The various government medical departments employ about 700 European medical officers, including some 30 women, and about 1200 locally appointed medical officers. Medical experience may include—among other diseases associated with the tropics—malaria, yaws, leprosy, sleeping sickness, plague, yellow fever and cholera, as well as the diseases of common medical practice. An officer in the Colonial Medical Service has special opportunities for the practice of his profession in preventive medicine as well as in other branches; there are also opportunities for teaching and research. Full particulars of the terms and conditions of service may be obtained from the Director of Recruitment (Colonial Service), Colonial Office, 2, Park Street, London, W.1.

SOUTHERN RHODESIAN MEDICAL SERVICE

The government of Southern Rhodesia maintains a medical and public health service in which there are 16 whole-time appointments and 34 part-time appointments. The part-time government medical officers are usually in general practice and serve all stations except the large towns of Salisbury and Bulawayo. There are also 9 medical officers who receive a subsidy of £250–£360 a year for doing necessary government work; most of these are medical officers to mines or medical missionaries.

Rates of pay for whole-time medical officers range from £750 to £1500 p.a. Government part-time medical officers are appointed at a salary of £600 p.a. rising by £25 increments to £750 p.a. Promotions are made as vacancies occur to posts which carry a final salary of £900 p.a. Officers usually find that practice offers an additional source of income ranging from £200 p.a. upwards. Their government duties include the supervision of the 18 government hospitals and numerous native clinics, and of gaols, police camps and government stations. Leave is granted at the rate of one-eighth of service, and may be taken in periods not exceeding 184 days at a time; study leave is also granted. After two years' service medical officers under 45 can be appointed to the fixed establishment and contribute to a pension scheme, the retiring age being 60. The service has released many officers to serve in the Forces, and additional calls have been made on the remaining medical personnel since the department took over the hospital care of a large air-training group in the colony, as well as the supervision of the several camps of interned Italian civilians. Appointments in Great Britain are made by the High Commissioner for Southern Rhodesia, 429, Strand, W.C.2, who will supply details on request.

SUDAN MEDICAL SERVICE

This service is responsible for carrying out civil medical and public health duties in the Anglo-Egyptian Sudan and for the health of the Sudan Defence Force. The British staff consists, at present, of 34 medical inspectors and senior medical inspectors with 11 additional senior posts, promotion to which is by selection. Medical inspectors are first appointed on probation for two years. Pay starts at £E720 (approximately £738), rises by biennial increases to £E1080 and after 13 years service to £E1200 (approximately £1230). There are higher scales of pay for the senior posts. No income-tax is at present levied in the Sudan. There is a pension and provident fund. An official qualifies for pension at the age of 48 if he has then completed at least fifteen years' service, and retirement is usually enforced at 50. There is provision in the pension scheme for widows and children. The service offers experience among many different races, including medical and surgical work in large and well-equipped central hospitals, supervision of medical and public health work in the towns and districts, inspection of schools and school-children, examination of candidates for government service and the training of Sudanese doctors, sanitary officers and overseers. The Khartoum Medical School is staffed by members of the service who receive additional remuneration for this work. Private practice is allowed so long as it does not interfere with government duties, but there are opportunities for such practice only in a few of the larger towns. In peace-time, leave of 90 days is usually granted every year after the first 18 months of service, and study leave may be given for special purposes.

Since 1940 and up till quite recently there has only been local leave in Africa and the Near East. Now leave of 60 days in Great Britain is obtainable on a definite priority list, according to length of tour without home leave. Full pay is drawn during leave periods and there are allowances towards the cost of passages. Since the war the service has had to undertake many additional responsibilities. Nearly half of the members have been given temporary commissions and a number have found that their duties have carried them into adjacent territories. Recruitment ceased at the end of 1939, but has since been revived, and there are vacancies at present. The Central Medical War Committee is fully aware of the requirements of the service and has raised no objection to the appointment of those selected to fill vacancies. Further information and particulars as to vacancies may be obtained from Dr. H. C. Squires, consulting physician to the Sudan Government, 93, Harley Street, W.1.

Postgraduate Study

THE request of the Minister of Health that universities and medical schools should suspend whole-time postgraduate courses as far as possible has been so widely supported that special courses in the United Kingdom are now extremely rare, though opportunities survive in Eire.

At the time of going to press, it is still uncertain what facilities will be available in London in the coming year: all depends on the progress of the war. As things stand, the undergraduate medical schools still provide opportunities of work for higher examinations for their own graduates. Most schools and hospitals which take postgraduate students in peace-time fall into one of three groups:

A. Those hospitals which are carrying on much the same teaching facilities as before the war.

B. Those which, as a result of bomb damage or the need for reserving beds for the EMS, have little or no facilities for inpatient teaching, but which continue to teach in outpatient departments, and still offer resident appointments; in some of these, selected students can be taken on as clinical assistants and in most of them hospital practice is available by arrangement with the dean.

C. Those hospitals which have had to suspend postgraduate teaching altogether, but which still appoint resident officers and in some cases clinical assistants.

The refresher courses for insurance practitioners organised by the Ministry of Health before the war are still suspended, but equivalent instruction is still provided in London by a programme selected from the activities of the various departments of the British Postgraduate Medical School, and to a large extent by practice at the Prince of Wales's, Hampstead General, and Metropolitan Hospitals.

GENERAL HOSPITALS

At the British Postgraduate Medical School (group A), although the number of beds is reduced and the full-time staff depleted by the Services, teaching is continuing on prewar lines, though students wishing to attend for more than one month have to obtain special permission. The ordinary programmes are being carried on in medicine, surgery, obstetrics and gynæcology, and pathology, and the principle is maintained of continuous teaching by the ordinary British methods of bedside tuition and lectures rather than by specific courses. The teaching is suitable both for those who merely wish to improve their knowledge and for candidates for higher examinations. The special war courses have also been suspended, since with the change to offensive warfare the Services can no longer spare men for instruction. A limited number of students can be given a fortnight's special tuition in anæsthetics, the fee being 3 guineas.

The Prince of Wales's, Hampstead General and Metropolitan Hospitals fall into group B, and the Royal Northern, the National Temperance, and Queen Mary's Hospital, Stratford, into group C.

SPECIAL COURSES

Public health.—All university courses for diplomas in public health are at present suspended except those at the three colleges of the University of Ireland, at Dublin, Cork and Galway. A course will be held at the Royal Institute of Public Health and Hygiene during the coming session for any candidates who are eligible for enrolment under war-time requirements.

Psychological medicine.—The universities of London, Durham, Leeds, Manchester, Edinburgh, Belfast, Dublin (Trinity College), Ireland (National University), and the English and Irish Conjoint Boards normally offer diplomas in psychological medicine. The University of London also grants a diploma in psychology, taken chiefly by social workers, the course for which is still being held at the London School of Hygiene and Tropical Medicine. The courses for the diplomas of Durham, Leeds, Manchester and Belfast Universities are at present suspended, and at Edinburgh future courses will depend on the demand and on the staff available.

The course for the DPM will be held at the Maudsley Hospital as usual in the early months of next year. In January and February lectures and practical instruction are given on the anatomy and physiology of the nervous system, and on psychology, covering part 1 of the DPM syllabus. From March to May inclusive the lectures with clinical demonstrations cover all aspects of psychiatry and mental deficiency, and clinical instruction in psychiatry and neurology complying with the requirements of the examining bodies is arranged. Lectures and demonstrations are also given on neuropathology. The clinical staff of the Maudsley Hospital is still distributed between the Mill Hill and Sutton Emergency Hospitals, and the clinical instruction in psychiatry is given at these hospitals and also in the London County Council mental hospitals and institutions for mental deficiency. Teaching is given in those developments of psychological medicine which have become prominent during the war, such as the clinical application of psychological testing, appraisal of psychometric data, prognosis in traumatic and other neuroses, and short methods of treatment. Apart from the DPM course, clinical instruction in war neuroses and other aspects of psychiatry is continuous throughout the whole year at Sutton and Mill Hill Emergency Hospitals. Information can be obtained from the honorary director of the medical school, Central Pathological Laboratory, West Park Hospital, Epsom, Surrey.

The Tavistock Clinic continues teaching on a reduced scale. The systematic course lasting two years is at present in abeyance, but special arrangements can be made for any applicant who wishes to gain postgraduate experience in psychiatry. Doctors holding fellowships granted by the Child Guidance Council are working in the children's department of the clinic in order to prepare themselves for psychiatric posts in child guidance clinics. The clinic plans to provide for those who have special interest in the psychoneuroses and in child psychiatry. Any doctor desiring fuller information about postgraduate training in these subjects should apply to the educational secretary, Tavistock Clinic, Kidderpore Avenue, Hampstead, N.W.3.

Tropical medicine.—A diploma in tropical medicine is required by those seeking medical appointments in the tropics. Three bodies normally grant such diplomas: Liverpool and Edinburgh Universities, and the English Conjoint Board. Courses normally held at the London School of Hygiene and Tropical Medicine and the Liverpool School of Tropical Medicine have now been suspended until the end of the year, and no regular courses have been held recently for the Edinburgh diploma; future courses at Edinburgh will depend on the demand and on the staff available. Examinations for the Conjoint diploma have been cancelled for the duration of the war.

Intensive courses in tropical medicine and parasitology, each lasting a fortnight, are provided at both the Liverpool and London schools, however; these are mainly for medical officers of our own and allied Services, though civilians may also attend them by special arrangement. Information may be obtained from the laboratory secretary, Liverpool School of Tropical Medicine, Pembroke Place, and from the dean, London

School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.

Neurology.—At the National Hospital, Queen Square (B), hospital practice is available to selected clinical clerks (5 guineas for three months, 7 guineas for six months) and outpatient clinics are held each morning at 11 AM on Monday to Friday (1 guinea for one month, 2 guineas for three months). The West End Hospital (B) is continuing its teaching in the outpatient department. The Maida Vale Hospital (B) provides hospital practice and may be continuing DPM teaching if it is needed.

Heart and Lungs.—At the Brompton Hospital (B) limited hospital practice is available, and courses are held in preparation for the MRCP and Conjoint examinations. The Royal Chest Hospital (B) provides outpatient practice and special courses on heart diseases in conjunction with the Fellowship of Medicine. The London Chest Hospital, Victoria Park (B), has been re-established after the damage it sustained, and provides facilities for hospital practice in all chest diseases, including tuberculosis. It has a country branch at Camberley, Surrey.

Children.—The Hospital for Sick Children, Great Ormond Street (B), is providing limited postgraduate instruction; special consideration will be given to candidates for the diploma of child health. The Queen's (C) and Princess Elizabeth of York (C) Hospitals have suspended postgraduate teaching. Diplomas in child health are granted by the English and Irish Conjoint Boards and by University College (NUI), Dublin, where a course is now being arranged.

Maternity.—Queen Charlotte's (A) is not at present engaged in any graduate teaching since all its facilities are required for undergraduate training. The City of London Hospital (C) has been damaged and teaching is still suspended. Hospital practice in the maternity department of the British Postgraduate Medical School is available.

Cancer and Radiology.—At the Royal Cancer Hospital (A) teaching continues as before the war. Postgraduate courses are held qualifying for the diplomas in medical radiology of London University and of the Conjoint Board. The Mount Vernon Hospital (B) offers hospital practice in its hospital at Northwood; 50 beds are reserved for cancer cases and this number is likely to be increased. Additional cancer cases are received under the EMS scheme.

Ophthalmology.—The Royal London Ophthalmic Hospital (A) is carrying on as usual at Moorfields. The Central London (B) continues as usual, except that no special courses are being held. The Oxford University course for the DO is being continued.

Ear, Nose and Throat.—At the Royal National Hospital (B) hospital practice is available but no special courses are held. The Metropolitan Hospital (A) is continuing its teaching and classes on outpatients in London, but all inpatients are transferred to the EMS base hospital. Golden Square Hospital (B) provides hospital practice.

Orthopædics.—The Royal National Orthopædic Hospital (B) has suspended teaching, but the outpatient department is open to postgraduates.

Genito-urinary and rectal diseases.—The London Lock Hospital (A) continues to provide instruction for postgraduates who wish to obtain the 130 hours' instruction required by the Ministry of Health for a special certificate, and limited teaching facilities are available. Hospital practice is available in the outpatient department of All Saints (B) and St. Paul's (B). At St. Peter's Hospital (B) practice is available in the outpatient department. Special courses are held at Colindale on behalf of the Fellowship of Medicine, which makes arrangements if there are a sufficient number of applicants.

Skins.—Limited hospital practice is available in the outpatient department at the London School of Dermatology (B) and there is a regular teaching session in outpatients at the British Postgraduate Medical School on Thursdays at 2 PM.

Tuberculous diseases.—The course and examination for the diploma in tuberculous diseases normally granted by the University of Wales are suspended, and no other diplomas are available in this subject.

Bacteriology and clinical pathology.—The courses for the diplomas in bacteriology of London and Manchester Universities have been suspended. The University of London diploma in clinical pathology is not officially suspended and the British Postgraduate Medical School will consider applications for a course.

Anæsthetics.—Practical courses of instruction in anæsthesia, lasting a fortnight, are provided at the British Postgraduate Medical School (fee 3 guineas). Arrangements can be made through the Fellowship of Medicine for instruction in the department of anæsthetics at Oxford; apart from this routine teaching the department also offers fortnightly revision courses twice a year, at which graduates are given three lectures daily and attend the routine anæsthetics in the Radcliffe Infirmary.

Industrial health.—Week-end courses in industrial medicine and hygiene are provided periodically by the London School of Hygiene and Tropical Medicine and by the Universities of Birmingham, Leeds, Manchester, Sheffield and Bristol.

EXAMINATION RESULTS AND AN INTELLIGENCE TEST

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THE reports of the Royal College of Physicians (1944) and of the Interdepartmental Committee on Medical Education both stress the special importance of choosing suitable students for medicine. It is admitted that this is a matter of considerable difficulty, and it has been suggested (*Brit. med. J.* 1944, i, 665) that intelligence tests should be applied to candidates for admission to medical schools.

For the past three years, the medical students in their second year's work at Queen's University have carried out an intelligence test, using Raven's Progressive Matrices (1938). The scores obtained have been compared with examination results. The test was introduced partly as an educational measure, to interest students in some aspects of elementary psychology, and from this point of view it has been very successful and may be recommended as a useful starting-point of a course in normal psychology.

METHODS

Groups of 8 students were tested in a separate room during the practical physiology class. In the first year the test was used unlimited time was allowed. The scores obtained were closely grouped at the upper end of the scale; in the following years a time-limit of 20 min. was imposed, as suggested by Raven (1942). The students have proved coöperative, wishing to carry out the test conscientiously. They have been assured that the results of the test will in no way affect their marks in the professional examination. On rare occasions students have not wished to carry out the test, and these have not been pressed to perform it. Well over 90% of the available students have been tested. Raven (1942)

TABLE I—SCORES COMPARED WITH RAVEN'S ADULT GROUP. MAXIMUM SCORE, 60

Score	Adults (Raven)	Students		
		1942	1943	1944
	Unlimited time		20 min. limit	
	%	%	%	%
54–60	10	33	4	5
49–53	15	41	41	31
44–48	25	12	29	31
37–43	25	11	20	29
28–36	15	3	5	4
0–27	10	0	1	0
Number tested	3665	90	81	87
Mean score ..	..	52·5	46·7	46·1
Median score	44	54	47	46

A time-limit of 20 min. was imposed in 1943 and 1944, so these figures are not comparable with the 1942 figures or with Raven's 1938 figures. Comparison of the first two columns suggests that about 85% of the students tested in 1942 had a better-than-average performance in the test.

has shown the importance of these points in the interpretation of the results.

The students included 20% women ; the average age of both men and women was 19½ years.

RESULTS

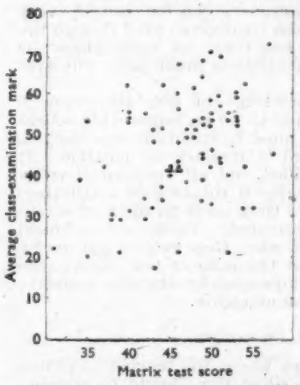
The scores obtained in the test are compared with figures taken from Raven (1938) giving data for an unselected adult group (table I).

CORRELATION WITH EXAMINATION RESULTS

The average mark in the terminal class examinations in physiology was used as a basis for comparison. The correlation coefficients for the 3 years (ungrouped data) were :

1942	..	$r = +0{\cdot}228$ $N = 90$
1943	..	$r = +0{\cdot}382$ $N = 81$
1944	..	$r = +0{\cdot}325$ $N = 77$

The value found in 1942 might have been expected to arise as a chance fluctuation once in 30 times, the other two values are highly significant. But the correlation, although significant and indicating statistically that the two sets of marks are definitely not independent, is slight. The scatter diagram for 1943, reproduced in the figure, gives a good idea of the relationship.



Scatter diagram showing the relationship between the average mark in class examinations in physiology (1943) and the number of problems correctly solved in 20 min. in the matrix test.

The relationship between the matrix test scores and the results of the first MB examination (i.e., in physics, chemistry, botany and zoology) was also examined. The attributes examined were : passing in all four subjects at the first attempt ; and being in the upper third of the year as measured by the matrix test. The probability that these attributes are independent was found to be :

1942	..	$P = 0{\cdot}034$
1943	..	$P = 0{\cdot}0044$
1944	..	$P = 0{\cdot}0002$

It is concluded that, although these attributes are not independent, the degree of association is not high, so the result is very similar to that obtained with the second year physiology results.

In view of the slight relation between the matrix test results and the examination marks, the relation between the first MB and the second MB (anatomy and physiology) examinations was considered, to see how far the results of one examination could be predicted from the results of another. The figures, shown in table II, indicate that there is a close relationship.

TABLE II—RELATION BETWEEN RESULTS IN FIRST AND SECOND MB EXAMINATIONS

Students	Examination subjects passed in 1st MB (1st attempt)	Passed 2nd MB (1st attempt)
		%
171	4	86
85	3	52
49	2	28
45	1 and 0	22

Inkster (1944) has described the results of a comparison between an intelligence test and the performance of students in anatomy. Although the test was of a totally different nature, his results were closely similar to our own comparing the matrix test and performance in physiology.

Since it might be considered that anatomy and physiology are subjects requiring rather different qualities for successful study, a comparison has been made of the marks obtained in the second MB in anatomy and physiology in the past 3 years. The means for each year have been adjusted to eliminate spurious correlation. The correlation coefficient ($N = 218$) was $+ 0{\cdot}87$. The standard error of estimate of anatomy mark from the corresponding physiology mark was 4·86 marks. There is thus a high degree of correlation between performances in the two subjects.

The marks in the anatomy class examinations have also been compared directly with scores in the matrix test. The results are closely similar to those obtained using the physiology mark as the basis of comparison—e.g., in 1944 the correlation coefficient was

$r = + 0{\cdot}31$ (anatomy mark and matrix test)

as compared with

$r = + 0{\cdot}33$ (physiology mark and matrix test).

DISCUSSION

One of the most striking and important points which emerges from these results is the high mental ability of the average medical student, as measured by the matrix test. It is clear that a fairly rigid process of selection has already been applied by the time the student reaches his second year. The median mark of 54 out of 60 compares very closely with Raven's (1941) result with university trained militiamen, for whom the median mark was 55. This indicates that the medical students of Queen's are probably representative, as regards intelligence, of medical students at other universities.

The report of the Royal College of Physicians (1944) describes the average medical student of today as lacking in initiative and curiosity, with poor ability to arrange and interpret facts, and little precision in the use of words. If we accept the statement, either unusually great ability is necessary to avoid these faults, or they are not primarily due to any lack of intelligence.

The low degree of correlation between the results of the test and examination results is, at first sight, surprising. It is probably due in part to the relative homogeneity of the group. Had the proportion of students with very poor or with excellent performances in the matrix test been higher, it is likely that a greater degree of correlation would have been found. It is evident that the test is of little value in attempting to predict the probable future performance of the individual student in examinations. It appears to be true, however, that those few students who have scored exceedingly low marks in the intelligence test do not, in general, succeed in their professional studies. They are so few that their elimination would not materially reduce the number of failures in the professional examinations.

The point of immediate importance is whether the matrix test would be of value in the selection of students for entry. The test could be applied in an attempt to eliminate the unsuitable student. In this case, to avoid the risk of failing candidates who might ultimately prove satisfactory, the minimum mark in the test would have to be set so low that very few students could be rejected. On the other hand, in order to select students who would almost certainly do well in their examinations, a very high standard indeed would have to be set. We have estimated that to reduce the percentage of failures to one half of the present figure, five-sixths of the present entry would have to be rejected. A very large number of potentially satisfactory students would thereby be excluded. We consider that while intelligence tests are not without interest in this connexion, the results must be applied with very considerable caution. In general, it is probable that the results of previous examinations form a more reliable index of results in future ones.

Although further work is required to show if our results are generally applicable, it is of interest that Inkster, using an entirely different form of intelligence test, has independently reached very similar conclusions.

We have used examination marks throughout as a means of assessing students, on the grounds that such marks are relatively objective and other methods of

comparison are chiefly personal. We do not wish to imply that success in examinations is the only criterion of the satisfactory student.

SUMMARY

The results of examining second-year medical students by means of the matrix test have shown that they form a selected and fairly homogeneous group of high mental ability.

The correlation between these results and examination results is slight; examination results, inter se, show a much closer relationship.

We consider that the matrix test would be of limited value in selecting students for entry to medical schools.

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SCIENTIFIC FILMS
FOR BIOLOGICAL AND MEDICAL PURPOSES[1]

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PRODUCTION of scientific films for medical and biological purposes presents peculiar problems. The producer must be fully aware that living things are in a continual state of change, and that this changing is due to the adaptation of the living system to changes in its environment. If the system is to continue to live, changes in the external environment must induce changes designed to keep the internal environment of the tissue constant within the narrow range where life is possible.

In any demonstration of living processes new variables are introduced—for example, by anæsthesia. We attempt, therefore, to control variables as much as possible; and when we wish to make a film record, we must pay attention to additional variables introduced, such as heat generated by the lighting equipment.

Films may be classified in two main groups: those which do not contribute to knowledge, but merely present known facts; and those in which the film contributes to our knowledge of living processes or scientific technique. These groups may be subdivided into films comprising a planned series of demonstrations, and single films which do not form part of a series.

In teaching, films are used to "put over" scientific knowledge in a scientific manner. This should imply an orderly and objective presentation of the facts, but unfortunately many medical and biological films are neither orderly nor objective and yet are labelled scientific. This usually results from lack of knowledge of cinematographic technique and of planning and appreciation of the possibilities of the film. Poor films have been produced on subjects which should never have been filmed. I have seen one which was nothing more than a lantern slide over 600 ft. long, composed of running titles and shots of stills.

The producer is often a research-worker in a laboratory. He will sometimes get either a colleague who is an amateur cinematographer, or his photographic department, to deal with the camera and lighting; but the average photographic department has little knowledge of cinematographic technique. Rarely he employs a professional film unit. In my opinion, it is essential nowadays to utilise a professional film unit whenever possible, although such units are still not experienced in this particular field. There are, however, some skilled people who have produced good work on their own. In a few long-term experimental procedures the help of a film unit would be unjustifiably expensive, but it would be worth seeking the help of such a unit for professional script assembly and titling. These notes are addressed to professional film makers with little biological knowledge, and to biologically or medically trained producers who are not really familiar with the full scope and possibilities of the film.

1. Extracts from an address to the Association of Scientific Photography given on June 24.

PRELIMINARIES

It is essential that all the preliminary work, writing of the script, camera position and angles, lighting and exposure tests in difficult subjects, experimental procedures, and so on should be fully completed before a single foot of the actual film is exposed.

First, then, write the script, put on paper what is to be demonstrated, decide definitely on the effect desired. If the film is to be one of a series, at least two, preferably three, of the scripts should be worked out. Each film should be complete in itself and at the same time in such a form that the succeeding films logically follow on. The student should carry away with him a vivid memory picture and a good general knowledge of the field covered.

The purpose of any film is to demonstrate motion or change. If there is no motion or change, it is nearly always better to use lantern slides or charts. Some branches of anatomy, however, can be taught very effectively with suitable film treatment, even though the structures may be static, and there are cases where the use of the film and lantern slide is much more effective than either alone.

In presentation, a knowledge of film technique is indispensable. If the film is to be an impeccable source of knowledge, the subject must be faithfully represented, and in as straightforward a manner as possible. It should not be over-simplified, but all unessential views (i.e., of apparatus, especially if rotating or oscillating) should be eliminated since they serve to distract attention from the point demonstrated. Tricks and technical effects should only be used when they help to put over a particular point, never for the sake of the effect; the audience is likely to be impressed by the effect and to miss the point of the demonstration.

SILENT OR SOUND

To my mind, in all cases where the teacher's opinion has to be considered, the silent film should be chosen; but if the aim is to demonstrate the discovery of a particular scientist, or an applied technique by an acknowledged expert (e.g., anæsthesia, plastic surgery) then most certainly use sound. If possible, the commentary should be written, or better still, written and spoken, by that authority.

In films dealing with the mechanism of living processes, there is much difference of opinion on the interpretation of detail. These films should therefore be silent with a minimum of captions. Captions should only clarify procedure and should assist the fluid continuity of the film. All films should be taken at sound speed so that a sound track may be added if required.

WRITING THE SCRIPT

In writing the script for a teaching scientific film, first of all split up the demonstrations into a series of stages or sections, beginning with the simpler and building up to the more complex. Write a clear short series of lecture notes such as would be used before giving a living demonstration. If the script is not coherent the film has no chance. Visualise as much as possible its appearance on the screen. Using these notes as a basis, rewrite, from the beginning, each part in full detail; put down every step in procedure. Underline or note particular points which should be stressed, which are likely to be missed, or which may be difficult to understand. Make notes of the approximate time required for each procedure. This is important, since processes taking either a few microseconds or many months will have to be demonstrated within the space of a few minutes, yet in such a way that the audience appreciates the relative time factors.

We now have all the information necessary for the writing of the shooting script with full camera instructions. With experience, it is possible to get a clear mental picture of the lens field and to train oneself to think in terms of different focal lengths. When working with colleagues who have difficulty in appreciating the

camera field, I use an optical viewfinder, such as that which can be detached from the 'Kodak Special,' and get them to view fields from different angles and at different focal lengths; this is satisfactory, and has resulted in requests for a lens with similar characteristics to the optical view-finder. Lens computers might produce a much-needed "zoom" lens for 16 mm. work.

The writing of the shooting script with full instructions is probably the most difficult task of all. Only those shots which are essential to the film must be made, though of course it is better to take too much than too little, to allow for cutting. Cutting and editing must not be relied on to correct mistakes, however.

Can film technique clarify difficult points in the demonstration? Is it desirable to use accelerated or slowed motion? If it is decided that the motion should be accelerated, it must be remembered that all movements in the field are affected.

> For example, a slow change may take place in a subject in which the respirations are also visible; if less than the standard number of frames per second is taken, say 4, then when the film is projected at normal rates, the picture will show such rapid movements of the whole that it will be difficult to see what is really going on. This can be overcome by arresting respiration, if that is possible, or by a series of dissolves. If, however, you wish to impress the audience with the gradualness of the change, then split-screen photography will do this very well; the split screen showing the same part before and after the change. It can also be used to show the effects of two different procedures on the same organ.
>
> I have used this technique to demonstrate the effects of different agencies on the contraction and colour of the spleen.

Time-lapse work is of great value in cinephotomicrography and in the botanical fields, and much new information has been obtained by this method, as Warren H. Lewis and P. W. Gregory have shown in their film on the developing ovum.

Slow motion, following normal motion, should always be used where change is very rapid—for example, in demonstrating wing movement in flight, sequence of events in the contracting heart, the breakdown of a tissue under stress, and so on.

Animation and superimposed outlines are also valuable, but this technique should only be used when it is not possible to use other photographic means. Animation must be done really well. Many animations at present create a ludicrous effect owing to poor technique. Animation must be as smooth as possible, and great care must be taken with outline registration; there is nothing more irritating than a figure which shimmies and squirms on the screen. Whether the drawings be animated or static, they should be left until all the living shots have been made. The drawing should be a much simplified though faithful representation of the subject, not too stylised. General form and outlines should be based on enlarged frames of the actual film, or from stills taken at the time of shooting. Static outlines, used to assist the audience in orientation, must be made from one of the actual frames in the sequence. Rather than having a drawing preceding or following an actual shot, it is preferable to superimpose the outline over the actual scene and to fade it in and out as required. Diagrams and animation should of course be fully noted in the script.

In the type of film we are discussing (one which is not making a new contribution to knowledge) we should send copies of the completed script to colleagues in the same field, in order to get constructive criticism. Two, or possibly three, outside people who will be using the films are all that are necessary. In the case of a sound film, this often results in an improvement in the commentary. But do not send the film script to a large committee: they often cannot differentiate between commentary and camera instructions, and insist on altering the grammar in both, because they feel they should do something. In films for export, we should, I think, use a panel of experts, since the film must give a balanced statement of the scientific progress and generally accepted opinions of the country of origin; but I do not consider this essential when the purpose of the film is to demonstrate the particular technique or discovery of a living worker who has taken part in the production. If he has not shared in the actual production, he should be consulted at every stage, and his approval of the final result obtained. It is far better that criticism should be levelled at the script stage, before any of the shots have been made, than when the film is completed, since then it may be impossible to effect the necessary amendments.

TAKING THE FILM

When the final version of the script has been completed and approved, the means of its recording must be gone into in detail. In biological and medical subjects, most of the phenomena are unlikely to be repeatable; in most cases half a dozen retakes cannot be made on the same subject. Where a retake is necessary, the unit may have to wait for another case or a new subject to enable them to replace their unsatisfactory shots, and to repeat a longer sequence than the one spoilt in order to obtain case continuity. In surgical films, the cameraman must go and watch the type of surgical procedure he is going to record, and examine the surroundings in which he is to work. Operations cannot be held up for the camera. The camera must not get in the way of the surgeon, nor, of course, must the surgeon's hands or head obscure the field. In other words, the surgeon and camera must work as a team; each must anticipate the other's movements. The camera has to be fitted into the routine of the operating theatre and must not constitute a hazard. If the camera can operate from an overhead framework, so much the better. Here, the lighting, camera, and camera-man can be divided from the subject by sterile cloths draped over the structure, apertures being left for the lens and lights, and a transparent window sewn into the cloth for direct observation.

It is usually necessary to make two complete takes of any surgical procedure. The first is useful as a trial; the camera-man can alter his lighting, fields and angles; the surgeon the position of his hands and so on.

In experimental procedures we have more freedom: the camera can take liberties, the experiment must be so organised that it assists the camera. But the ideal in which the camera is considered first is not always achieved. The experiment may have to be carried out in a laboratory possessing facilities peculiar to the work, and this may have many disadvantages from the viewpoint of the camera. It may be too small or too low, or glass-door cupboards may have to be draped. There is nearly always some serious snag to be overcome if the experiment cannot be set up in a room adapted to studio requirements, but luckily it is rarely necessary to include an area greater than two square feet. In going over some of my own films, I find that, with the exception of three, the area has never been greater than 1½ sq. ft., usually very much less. Even so, our range is enormous, as it may be anything from 0·1 mm. square, with an object of study only a few μ long, to about 0·2 sq. m.

Some laboratories have a floor pit. Working in this with the preparation a few inches above floor level gives the operator greater freedom with camera and lighting. Whenever possible, use more than one camera, preferably with rapidly interchangeable magazines or some speedy method of reloading of the order of 10–15 sec.

All biological subjects are sensitive to heat; we may want much light, but it is of no use if we have too much heat. By trial and error, I have found that a maximum of 4 photofloods no. 1 type at 2 ft. and four 500 watt incandescent lamps at 3 ft. are about all that living organisms will tolerate, without change, for longer than 60 sec. Even this will produce drying effects on exposed organs in less than 2 minutes. These lights are all housed in matt reflectors. All exposed tissues should be covered with warm saline pads until shooting actually begins, and covered between shots.

Mirrors can be used to get light into awkward fields but heat and light are both reflected, and, with the mirrors likely to be used, the longer wave-lengths are apt to be reflected more than the shorter. Since in some cases we may be working at the limit of heat tolerance, this factor can be significant.

If necessary a sterile atmosphere may be obtained by using ultraviolet lamps before shooting begins. The intensity required is about 50–60 microwatts per sq. cm., at 1 m. distance.

Mock runs of the complete take are made before the film is taken; three or more may be necessary. The demonstrator should be made to do all his movements deliberately. Never include more of the demonstrator than necessary; the hands or even the finger tips are all that may appear, and even these should be out of the field whenever possible. Keep the attention riveted on the part demonstrated. All instruments which the demonstrator may require should be placed conveniently to avoid fumbling, but they should be out of the field. When rehearsals are satisfactory, do a final rapid check up before taking. In experimental work, all runs much more smoothly if the demonstrator is also the producer.

THE FINAL STAGES

Cutting and editing can make or break a film, and are matters of experience. The film should move with a steady tempo and should be a complete lesson in its final form. It should be on the short side: the maximum length for a scientific film is, in my opinion, 25 min., the ideal about 15. This statement should be qualified if the film demonstrates (*a*) a technique and (*b*) the results obtained by means of this technique: then two reels of about 15 min. each are quite permissible.

Diagrams and animation should be made at the editing stage. In tracing out a pump or other type of circuit do not wave the pointer about for emphasis, move it slowly and deliberately. When the indication is finished, allow the diagram to remain for a few feet so that the audience can take it in; the same applies before indication. Animation is better than a pointer.

Where complicated apparatus is involved a diagram is essential, and it is often useful to send out lantern slides with the film. This saves footage, gives the lecturer ample time to describe particular points, and the audience some idea of what to expect at important stages. For students, the film should also be used in conjunction with their textbooks. They should have been instructed to read up the text concerned, and a preliminary lecture should be given when the film is presented. Booklets should be sent out to the teacher, with the film, briefly introducing and describing it, and giving a short account of each shot, together with references to published work.

In some films recapitulation is desirable, especially when a complete technique is demonstrated. A good example of this can be seen in the recent film on ether anæsthesia. This has been further developed in a recently completed film on the movements of the tongue in speech. Any part will be available as a film loop, so that the same series of tongue movements and sounds can be presented to the student again and again—a new technique in presenting speech to the eye. For deaf mutes with a small amount of residual hearing, the signal from the sound track can be amplified and fed into earphones, so that each patient gets a hearing-aid.

There are specialised fields in which the professional film unit is at a loss, and where the filming is best done by the members of the laboratory. It is not possible to become an expert in all techniques: get the help of the best experts in each field, and work together. If this is not done results will be poor and there may be danger, as would be the case in X-ray work.

It is unfortunate that 16 mm. sound and projection facilities are poor, and that the lecture theatres and rooms used for screening are in many cases far from ideal. Every effort should be made to ensure good projection and presentation. None of the audience should be nearer than twice the screen width away, and the farthest not more than 10 times screen width away, with a maximum angle of 30° for viewing. Sheets with fold creases, yellow walls, roller screens torn at the roller junction, distemper on warped plywood, and sheets of blotting-paper do not constitute screens; and it is difficult to give a good showing when shafts of sunlight fall on the screen as the result of billowing blinds.

"... Reflection will show that every new therapeutic principle derives from Crucial Experimentation."—Sir ALMROTH WRIGHT, in a reprint from his Collected Researches, vol. IV.

THE CASE OF THE POOR STUDENT

THE Goodenough Committee have laid it down that a student's promise of developing into a good doctor should be the overriding factor in deciding his selection for medical training and that unsuitability for a medical career should be the sole barrier to admission to a medical school. Various funds, scholarships and grants are available, designed to ensure that no young person with the necessary qualities is hindered by poverty from entering a medical school; yet the evidence placed before the committee showed that in England and Wales (though not in Scotland) the medical schools are not recruiting from so wide a field as the other faculties of the universities. The committee believe that many parents do not realise that substantial help is available, and that pupils in many schools are not encouraged to think of medicine as a career.

It is worth while to review briefly the sources from which medical students can at present draw financial help.

Local authority awards.—Local authorities have the power, but not the duty, of providing financial assistance to young people seeking higher education. These powers have been used to varying degrees in different areas, depending on the wealth of the local authority, and the interest its councillors take in education. In some counties only one or two scholarships may be offered, in others perhaps as many as a hundred; so that a candidate's chance of studying medicine may turn upon his birthplace. Scholarships are awarded to secondary school-children on the results of the higher school certificate examination. They are open to students entering all university faculties and only a few local authorities earmark a given proportion for medical students. Incidentally, the pupil at a private school whose parents cannot afford to pay for a medical course is debarred from these grants. The sums granted commonly range from £50 to £100 a year, and are usually awarded for three years only, so that they are insufficient to carry the student through his course. Moreover competition with other would-be medical students and with students in other faculties may be keen: thus in a country offering 8 major scholarships annually to all classes of students there were 30 applications in 1938, 93 in 1943, and 75 up to May of this year.

State scholarships.—On the results of the higher school certificate examination students may also apply for state scholarships. These may amount to as much as £225 a year for students going to one of the major universities. Some hundreds of them are awarded yearly, but no fixed proportion of them is allotted to medical students.

University scholarships.—The universities and medical schools offer a large number of medical bursaries and scholarships which are listed in the *Public Schools Year Book* (1942, pp. 608–633). These vary in number and value at the different centres, but a good student has a reasonable opportunity of gaining an open entrance scholarship, worth anything from £10 to £300 or more, and perhaps of supplementing it later with a scholarship granted on the results of the pre-medical and preclinical examinations. The numbers of scholarships available vary greatly. Thus at one university there is only a single medical entrance scholarship, given once in five years; there are also a few scholarships for pupils from particular schools or localities, and though these may be held in the faculty of medicine they are not confined to that faculty. Students who get an open scholarship to a medical school can obtain an increased maintenance grant from the local authority—a fact not generally known. In addition, some schools have a fund for helping students who unexpectedly find themselves short of resources owing to the death of a father or some other piece of ill fortune; and some have loan funds, though students are usually discouraged from saddling themselves with debts.

School-leaving exhibitions.—Many schools grant exhibitions to students of promise.

Private endowments.—Many private benefactions exist for helping students; these include city companies, missionary societies (who give scholarships for the training of medical missionaries), funds such as the Carnegie Trust and charitable bequests. The Kitchener Memorial Fund offers scholarships to the sons of officers, and the Macloghlin scholarship of the London Conjoint Board, worth about £90 a year, is awarded to the student who get highest marks in the Conjoint pre-medical examination; the winner has to submit a statement of the financial position of his parents, attend an interview,

produce his school record and write an essay. No complete list of such benefactions seems to be available. The Editor would be willing to compile one for reference if bodies granting help to medical students would notify him, and give details of the grants offered. There seems to be no organised system by which such help may be sought.

The proportion of medical students receiving help varies in different schools. Thus at Leeds last year less than one in four held scholarships, whereas in other faculties half the students were being aided. At the Welsh School of Medicine, however, at least half the students are financially helped. Results of the questionary on the white-paper sent out by the British Medical Students Association show that nearly a quarter of the medical students replying were aided. A professor writes to us:

> "I cannot recall a single instance of a desirable candidate being prevented from coming here through lack of the necessary funds. Many of our students receive financial aid, and recruits are obtained from all classes of the community."

The impression left on the Goodenough Committee seems to have been that sources of financial assistance for medical students, though comparatively numerous, are haphazard and uncoördinated; their suggestions for ordering them are general rather than specific. They advise local authorities and other bodies making awards to keep in touch with each other, so that needy students should have good opportunities of making up the sums required to carry them through. They also recommend that a student should be provisionally accepted by a medical school before any award is made to him. A scheme of family allowances whereby an allowance is paid as long as the student attends an approved medical school would be the best safeguard, they consider, of the student who is hampered by his need to contribute to family resources.

The Norwood Committee, which reported[1] in 1941, proposed a unified scheme. Under this, students would take scholarship papers in a school leaving examination taken at the age of 18-plus. On the results, successful candidates would be recommended for state scholarships, and their fitness to receive them would be assessed by specially appointed boards, composed of representatives of local authorities, universities and teachers, who would also take into consideration the school record and the bearing of the candidate at an interview. Local authorities would be able to grant additional awards to candidates who needed them. This would make for more equal opportunities in the different areas of the country, and would avoid the award of scholarships on the result of an examination only.

The Goodenough Committee consider that university medical schools should continue to maintain funds for three purposes: to meet the needs of those students who come suddenly to the end of their resources for family reasons; to enable students of outstanding ability to give an extra year to anatomy or physiology, or to gain a science degree; and to encourage students in other faculties to study medicine.

THE MAN IN THE SERVICES

Needy students at home now reaching university age thus have some fairly clear paths to follow. Those young people in the Forces who think of taking up medicine after the war are differently situated. They are not eligible for ordinary grants on the results of a school examination, and their war service will have spoiled their chances of success in competing for university entrance. They will need and deserve some special provision, and this the Government is prepared to supply. The opportunities which will be open to such men and women are set out in a leaflet—*Further Education and Training Scheme* (P.L. 120/1943)—issued by the Ministry of Labour and National Service.

The scheme applies to men or women in the Forces and their auxiliary and nursing services, the merchant navy, civil defence services, police auxiliaries, and civil nursing reserve. Some places will also be available for candidates whose education or training has been prevented or interrupted by other work of national importance. A successful applicant will receive a grant enabling him to take the full course of training which he needs, the amount to vary with his obligations, financial resources, and the length and nature of the course. Those who have been discharged from war service through disablement or on medical grounds, and who are not required by the Ministry of Labour to undertake other forms of national service, are eligible to apply at once for assistance under the scheme to the Appointments Department, Ministry of Labour and National Service, Sardinia Street, London, W.C.2. The scheme as a whole, however, cannot come into full operation until general demobilisation begins.

1. Curriculum and Examinations in Secondary Schools. HMSO. 1s. 6d.

BRITISH MEDICAL STUDENTS ASSOCIATION

THIS year the activities of the BMSA have been largely local and spontaneous, but the central organisation has been responsible for distributing the questionnaire on the proposed national health service. The results of this, which bear out the policy of the association, have already been published.[1] Nearly all schools organised discussions and debates on this subject before answering the questionnaire, and interest was aroused even among previously apathetic students.

In London the BMSA has arranged two courses of lectures, one on war surgery and one on postwar relief and was able to secure good speakers, including in the first series Colonel Eliot C. Cutler, Major-General Max Page, Mr. A. H. McIndoe, Sir Ernest Rock Carling, Surgeon Rear-Admiral G. Gordon-Taylor, Prof. J. Trueta, Mr. A. Tudor Edwards and Sir James Walton. The lectures on war surgery were so popular that they have been printed and are now on sale.

The association coöperated with the National Union of Students and with the British Dental Students Association in the production of a report on student health,[2] dealing with an ideal health scheme for students and quoting work already being done in different universities to improve health and to insure against sickness. The use of films in health education was advocated, and the BMSA prepared a list of suitable titles, which was subsequently expanded into a complete guide to documentary films dealing with medical subjects. Two more sections have since been added, and the guide now includes both technical films and films of general interest on such subjects as housing and food production.

An investigation, growing out of the work done on student health, was made into catering in medical schools; the resulting exchange of ideas enabled several schools to improve their own standards. The association is now beginning a survey of the results of staff-student committees. Some of these have done good work, improving standards of teaching and enabling both sides to appreciate each other's current problems. In some schools the staff are opposed to these discussions, suspecting the students of a desire "to take over the administration of the medical school"; and many students seem incapable of making constructive criticism of the teaching: never having been asked their opinion before, they are prepared to grumble, but not to suggest improvements. In the worst cases they do not even grumble but accept conditions as unalterable. Where the staffs have coöperated they have been most willing to consider suggestions from students, and in one hospital changes were made in the teaching of four subjects.

The Midland schools have arranged several visits to each other and were able to hear other teachers, to study different methods of work, and to go a long way towards losing any parochial prejudices they may have had at the start. Many schools are publishing wall-newspapers dealing with current events and providing provocative subjects for discussion.

The annual general meeting of the association which should have taken place in July was postponed until November, owing to the war situation. The Minister of Health has promised to meet the BMSA to discuss student views on the white-paper. Despite considerable disorganisation of medical teaching, the year has been successful.

1. See *Lancet*, Aug. 19, p. 258. 2. See *Lancet*, 1944, i, 647.

Reviews of Books

Burma Surgeon

GORDON S. SEAGRAVE, lieut.-colonel, MC, US Army. (Gollancz. Pp. 159. 9s.)

Dr. Seagrave tells an epic tale of medical missionary work among the more remote tribes of Burma. He and his wife took over a small wooden hospital, filthy and derelict, in the town of Namkham. Within a short time they had trained a number of local nurses, and Dr. Seagrave was performing a great variety of major operations. "Surgery with waste-basket instruments. Orthopædic surgery without an X ray. Urological surgery without a cystoscope. ... Hospitalisation without a real hospital or any adequate equipment." Later he built a well-equipped stone hospital and a nurses' home; also branch hospitals and dispensaries, staffed by his own keen and competent nurses, covering a wide area. The construction of the Burma road, involving the employment of thousands of coolies, made further calls upon the mission, which soon grew into a vast and efficient organisation. Then came the Japanese war, and the last part of the book describes the rôle played by the mission in the battle of Burma and the subsequent retreat to India. It is an enthralling story of adventures and misfortunes met with unfailing pluck and perseverance, and it is told with modesty and humour. The only fault to be found is that the material is too compressed; there is ample for two volumes. But the one volume is certainly a book to buy.

Textbook of Histology for Medical Students.

(3rd ed.) EVELYN E. HEWER, D SC. (Heinemann. Pp. 364. 17s. 6d.)

ILLUSTRATED by plenty of photomicrographs and exceptionally good explanatory line drawings, this book is well designed for medical students. The text is straightforward, never losing sight of the fact that tissues and organs are not static but may change their appearance under different physiological conditions. Sections of the central nervous system in photograph and line, and precise delineation of the special sense organs are serviceable.

Structure and Function as seen in the Foot

F. WOOD JONES, MB, D SC LOND., FRCS, FRS, professor of anatomy, University of Manchester. (Baillière. Pp. 327. 25s.)

THIS book is supplementary to the author's well-known monograph on the hand. The skin, fascias, bones, joints, muscles, nerves and vessels are studied in turn, as well as the morphology, phylogeny and ontogeny of this essentially human appendage. Modern anatomical nomenclature is much criticised—a perennial problem which seems to have no immediate solution. Every part of the book is interesting but the section on the muscles, occupying a third of it, will appeal especially to the surgeon. For some time now orthopædic surgeons have realised that the actions of leg muscles have no significance unless studied in relation to walking, and it is refreshing to find these actions so carefully described by an anatomist. The book may be read with profit by anatomists, students and surgeons.

Savill's System of Clinical Medicine

(12th ed.) Editor: E. C. WARNER, MD LOND., FRCP. (Arnold. Pp. 1168. 30s.)

THIS unique English "institution" pursues its even course unruffled by wars or rumours of wars. The new edition, however, marks the end of an era, since Dr. Agnes Savill now retires from active editorship though she remains responsible for the section on dermatology. This noteworthy transition has been achieved without sudden change in policy or disturbance of continuity, and under the editorship of Dr. Warner the book will doubtless continue to serve as usefully as it has done for the last 35 years. Apart from the changes inevitable upon adequate revision, there are few alterations; the book presents medicine from the point of view of symptoms and signs as opposed to diseases. A new chapter on psychological disorders has been included, and other new material covers mass radiography and occupational therapy. Dr. A. L. Gregg has been responsible for revising the section on tropical diseases, but otherwise the team of contributors remains the same. Therapy is still a weak point, but the new edition is as valuable for practical detail as for its stimulating approach to the study of clinical medicine.

Manual of Pulmonary Tuberculosis and Atlas of Thoracic Roentgenology

DAVID LINDBERG, MD, lecturer on tuberculosis, University of Iowa. (Baillière. Pp. 233. 36s.)

THE material in this volume is derived from the State Sanatorium, Iowa. It is a brief survey of modern methods of diagnosis, treatment and control of tuberculosis, with valuable statistical tables showing the results of compression therapy, and of tuberculin and X-ray surveys in urban and rural areas. In the main the text is an outline of facts well known to the expert, without the discussion of their bearing that would draw in the general practitioner or student. The atlas occupies the greater part of the volume. The selection of cases of tuberculosis before, during and after treatment is good, but the non-tuberculous cases are not representative of the commoner diseases. For some reason the pictures are reversed, so that the reader looks at them as from behind the patient. While the quality of the original radiograms was for the most part high, detail has suffered from being reproduced as negative prints.

1943 Year Book of Industrial and Orthopedic Surgery

Editor: CHARLES F. PAINTER, MD, orthopedic surgeon to the Massachusetts Women's Hospital and Beth Israel Hospital, Boston. (Year Book Publishers; Lewis. Pp. 440. 19s.)

THIS is a good manual of recent and successful methods of orthopædic treatment. In the section on management of fractures, the transfixion method in closed operations is especially recommended, and Dr. Painter shares the modern view that the period of immobilisation of the shoulder-joint after manipulation should be reduced. Surgeons who have had to treat cases where this joint has been immobilised know how long a period of massage and other treatment is required to restore tone to surrounding muscles and full movement to the joint. The new approach to the hip-joint avoids the main vessels and nerves, and also makes for a shorter period of immobilisation. Mid-calf amputation for tuberculosis of the ankle-joint in adults has fully proved its worth, and experience here and in America suggests that a slightly higher site—about 5 in. from the articular surface of the tibia—is preferable to that often chosen. Below-knee amputation causes little disability, and both children and adults quickly become accustomed to the use of a prosthesis. The high percentage of deaths following conservative treatment of tuberculosis in the long bones indicates that amputation of the limb well above the infection, followed by the fitting of a prosthesis which relieves the bone of weight-bearing, may be expected to give the best results. Dr. Painter described the use of the "laminagraph" in locating the site and depth of infection in bone, but the necessary equipment is not available in many British hospitals. Earlier diagnosis, by this method, would make it possible to establish drainage in good time. The shortening of a normal limb to match one shortened by disease is discussed. This is seldom a popular measure, since a patient who has put up with the deformity until growth stopped is usually content to continue with whatever appliance he is using. Where shortening is considerable many choose amputation and are eventually fitted with a prosthesis. The whole of the section on functional disorders of the feet, including the paragraph on personal hygiene, is useful. Industrial medicine and surgery are well reviewed; there is much to be learned from every country on this topic.

Clinical Bio-chemistry

(5th ed.) IVAN MAXWELL, MD, B AGR SC, FRACP. (W. Ramsay (Surg.) Pty. Pp. 394. 27s. 6d.)

THIS useful work brings under one cover widely scattered information. It deals with all the determinations and examinations that would be required in a department of clinical biochemistry attached to a hospital. The production of the volume is good and the references adequate.

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Amer. J. Digest. Dis., 5:418

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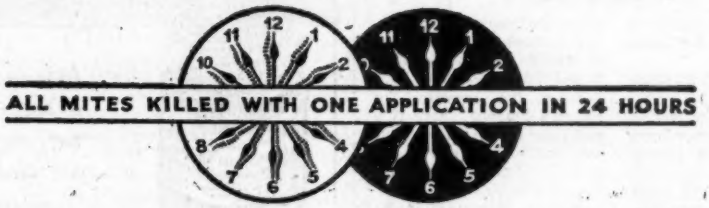

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as illustrated from the writings of the Organon and Modern Developments therefrom, will be given by Sir JOHN WEIR, G.C.V.O., M.B., Ch.B. Glasg., F.F.Hom., Physician to His Majesty the King, Physician in Ordinary to H.M. Queen Mary, Consulting Physician to The London Homœopathic Hospital, at the Winter Session only, on FRIDAYS, at 2.30 P.M., October to December, commencing Friday, OCTOBER 13TH.

TUTORIAL CLASS

A Class for individual Study of the Materia Medica by the Repertory and References to Patients will be conducted by AGNES MONCRIEFF, M.B., Ch.B. Glasg., F.F.Hom., Assistant Physician for Diseases of Children to The London Homœopathic Hospital, on FRIDAYS, at 3.30 P.M., October to December, commencing OCTOBER 13TH.

CLINICAL TUTORIALS

On MONDAY and FRIDAY afternoons at 2 o'clock, throughout both the Winter and Summer Sessions, the Medical Tutor to the Hospital, WILLIAM WILSON RORKE, M.B., Ch.B. Glasg., F.F.Hom., conducts an Out-patient Clinic for the purpose of instruction in the application of Homœopathic principles.

THE SIR HENRY TYLER SCHOLARSHIP COMMITTEE

offer SCHOLARSHIPS to Medical Men in the Provinces desirous of taking a Post-graduate Course at The London Homœopathic Hospital during the Ten Compton-Burnett Lectures.—Prospectus and further information regarding Scholarships may be obtained on application to the Secretary of the London Homœopathic Hospital, W.C.1.

CORRESPONDENCE COURSE

For the benefit of Doctors unable to attend the Post-graduate Lectures, a Post-graduate Correspondence Course has been inaugurated under the auspices of the British Homœopathic Association. For particulars apply to the Secretary, British Homœopathic Association, 43, Russell-square, London, W.C.1.

THE POLYTECHNIC

Regent Street, London, W.1.

DEPARTMENT OF CHEMISTRY AND BIOLOGY

Head of Department: H. LAMBOURNE, M.A., M.SC., F.R.I.C.

Session 1944–45 will commence on the 18th September. There will be full-time day courses for the following examinations:—

1st M.B., PREMEDICAL, INTERMEDIATE (PHARMACEUTICAL SOCIETY).

Evening Classes for these examinations will commence on the 25th September.

Full particulars of the courses, fees, &c., may be obtained from the Director of Education, The Polytechnic, Regent-street, W.1.

CENTRAL LONDON OPHTHALMIC HOSPITAL,

JUDD STREET, ST. PANCRAS, W.C.1.

This Hospital makes a speciality of Clinical Instruction in Ophthalmology.

The post of Clinical Assistant is open to Men and Women Students.

For further particulars apply to the Dean of the School or to the Secretary of the Hospital.

Charing Cross Hospital Medical School

(University of London)

The whole of the course, pre-clinical and clinical, is taken in London.

Admission is limited to 30 students a year. Classes and "firms" are therefore small and in closest association with teachers.

Every student holds clinical appointments in every department of the hospital.

House posts are available for every student after qualification.

The Students' Club provides facilities for all social activities and the Athletic Union has sections devoted to Rugger, Soccer, Cricket, Hockey, Tennis, Squash, Sailing, Rowing, Athletics, Swimming, Boxing, and Golf.

Tuition fees—38 guineas per annum

Further information may be obtained on application to the DEAN, CHARING CROSS HOSPITAL MEDICAL SCHOOL, 62, Chandos Place, London, W.C.2

Telephone No.: TEMple Bar 3903

MEDICAL CORRESPONDENCE COLLEGE

19, WELBECK STREET, LONDON, W.1

provides

Coaching for all Medical Examinations, D.A., D.P.M., D.O.M.S., D.L.O., D.C.H., M.R.C.P., F.R.C.S., M.D. thesis, and all qualifying examinations by a staff of high qualified Tutors, Honoursmen, and Gold Medallists

No interruption of Postal Courses during the war

Complete Guide to Medical Examinations sent free on application

Applicants should state in which qualification they are interested

EXAMINING BOARD IN ENGLAND

by the

ROYAL COLLEGE OF PHYSICIANS OF LONDON

and the

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Notice is hereby given that the following Examination will commence on the date stated below:—

DIPLOMA IN CHILD HEALTH
Monday, 25th September.

Candidates who have fulfilled the necessary conditions, and who desire to present themselves for examination, must give notice in writing to the Secretary, Examination Hall, 8/11, Queen-square, London, W.C.1, at least 21 days before the date of the Examination, transmitting at the same time such certificates as may be required by the regulations of the Board, together with the amount of the fee due (£6 6s.).

HORACE H. REW, Secretary.

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, October 9th, November 13th, December 4th, 1944. MEDICINE, PATHOLOGY, October 16th, November 20th, December 11th, 1944. MIDWIFERY, October 17th, November 21st, December 13th, 1944. MASTERY of MIDWIFERY EXAMINATIONS, May and November.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL

(UNIVERSITY OF LONDON)

HYDE PARK CORNER, S.W.

THE HOSPITAL and MEDICAL SCHOOL occupy the finest site in London, and are readily accessible from all parts of the Metropolis.

The entire teaching in the School is devoted to the subjects of the Final Examinations; in other words, **is specially adapted to the interests of men from the Universities who have passed their Examination in Anatomy and Physiology.**

St. George's students attend at King's College for tuition in the Preliminary and Intermediate subjects.

SEVEN ENTRANCE SCHOLARSHIPS IN ANATOMY AND PHYSIOLOGY, AND GENERAL PATHOLOGY, of the value of £120, £80 (3), £60 (2) and £50 respectively, are offered for competition in July to candidates who have passed the **2nd M.B.** or corresponding examination. In addition, **EXHIBITIONS,** each of the value of £40 and up to **Four in number,** may be awarded to candidates of approved merit in the Entrance Scholarship Examination.

RESIDENT HOUSE APPOINTMENTS. At the moment, these appointments are made under the E.M.S. scheme at St. George's and in the Sector. Commencing salary at the rate of £120 per annum.

MANY VALUABLE PRIZES ARE AWARDED EACH YEAR, including the following: Allingham Scholarship of the value of £87, Laking-Dakin Memorial Prize of the value of £115, the Brackenbury Prize in Medicine, the Brackenbury Prize in Surgery and the Webb Prize in Bacteriology, each of the value of £33.

The **ST. GEORGE'S HOSPITAL CLUB** incorporates the **RUGBY FOOTBALL, CRICKET, LAWN TENNIS, BOXING, RIFLE** and other Clubs, and possesses an **ATHLETIC GROUND** within easy reach of the Hospital, and Smoking and Luncheon Rooms on the School Premises.

Annual Composition Fee, which covers all courses, lectures, etc., in the Hospital and School, £42. Annual Club Subscription, £3 13s. 6d.

The Winter Session will begin on October 2nd, but students can enter at any time.

Further information may be obtained from the Dean of the Medical School.

H. W. GORDON, M.C., M.B., F.R.C.P.

BRITISH POSTGRADUATE MEDICAL SCHOOL

(UNIVERSITY OF LONDON)

DUCANE ROAD, SHEPHERDS BUSH, W.12

STAFF OF SCHOOL

MEDICINE

Professor: Sir Francis R. Fraser, M.A., M.D., F.R.C.P.
Reader: J. McMichael, M.D., F.R.C.P., F.R.S.E.
Senior Assistant Medical Officer (L.C.C.): Vacant.
First Assistants: +J. G. Scadding, M.D., M.R.C.P.
E. P. Sharpey-Schafer, B.A., B.Chir., M.R.C.P.
=N. S. Alcock, M.B., B.Chir., M.R.C.P.
Resident Assistant: P. J. W. MILLS, M.R.C.P., D.A.

OBSTETRICS AND GYNÆCOLOGY

Professor: James Young, D.S.O., M.D., F.R.C.S.E., F.R.C.O.G.
Reader: +R. J. Kellar, M.B., Ch.B., M.R.C.P.E., F.R.C.S.E., M.R.C.O.G.
Senior Assistant Medical Officer (L.C.C.): Barbara Field, M.B., B.Ch., M.R.C.O.G.
First Assistant: M. Kenny, M.B., B.S., M.R.C.O.G.
Visiting Obstetrician and Gynæcologist:
V. B. Green-Armytage, M.D., F.R.C.P., F.R.C.O.G.

RADIOLOGY

Radiologist: +J. Duncan White, M.B., Ch.B., D.M.R.E.
Assistant Radiologist: E. J. E. Topham, M.A., M.D., B.Ch., M.R.C.S., D.M.R.E.
Physicist: L. H. Clark, M.Sc., Ph.D.
Assistant Physicist: D. E. A. Jones, B.Sc., F.Inst.P.

SURGERY

Professor: G. Grey Turner, LL.D., D.Ch., M.D., F.R.C.S., F.A.C.S.
Senior Assistant Medical Officer (L.C.C.): S. W. Holmes, F.R.C.S.
First Assistant:
+D. M. Douglas, M.B., Ch.B., M.S., F.R.C.S.
Assistant in charge of Neuro Surgery:
G. C. Knight, M.B., B.S., F.R.C.S.
Part-time Assistant:
R. H. Franklin, M.B., B.S., F.R.C.S.

PATHOLOGY

Professor: J. H. Dible, M.B., Ch.B., F.R.C.P.
Readers: E. J. King, M.A., Ph.D. (Pathological Chemistry).
=The Rt. Hon. Lord Stamp, M.B., B.Ch., M.R.C.S., L.R.C.P. (Bacteriology).
Senior Assistants:
=J. M. Vaughan, B.A., D.M., F.R.C.P. (Clinical Pathology).
I. Doniach, M.D., B.S. (Morbid Anatomy).
Assistants:
+J. McLennan, M.B., Ch.B.
Mary Barber, M.D., B.S.
=D. M. Stone, M.D., D.P.H.
J. C. White, M.B., Ch.B.

+ These officers are on war service. = These officers are absent on E.M.S.

ADMINISTRATIVE

Acting Dean: C. E. Newman, M.D., F.R.C.P.

The British Postgraduate Medical School has been established for the more advanced tuition in Medicine of qualified medical men and women. It is entirely reserved for those holding registrable qualifications, or, in the absence of these, University degrees in their country of origin. Students can be admitted at any time and for any period to the ordinary teaching and hospital practice of the School. There are separate departments in Medicine, Surgery, Obstetrics and Gynæcology, Pathology, Radiology and Anæsthetics. The clinical work is provided in the Hammersmith General Hospital (L.C.C.) which adjoins the School.

Special intensive courses on various aspects of war medicine and surgery suitable for officers of the Forces and the Emergency Medical Service are held periodically and advertised in advance in the medical journals.

FEES: Tuition and Hospital practice, 1 month, Four guineas.

For further particulars apply:—

THE DEAN, British Postgraduate Medical School, Ducane Road, London, W.12. (Shep. Bush 1260.)

Postgraduate students who require information or advice as to courses of study and postgraduate facilities in England should apply to the Dean.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL

(UNIVERSITY OF LONDON.)

Dean, JOHN B. HUNTER, *M.C.*, M.Ch., F.R.C.S.

THE NEW MEDICAL SCHOOL contains Lecture Rooms, Lecture Hall, Museum, Research Rooms and Laboratories, Bio-Chemical Research Laboratory, Common Rooms and Refectory. Two Squash Rackets Courts adjoin the School.

FOURTEEN ENTRANCE SCHOLARSHIPS, total value £1530, are awarded annually.

RESIDENT HOSPITAL APPOINTMENTS, numbering 41, are made during each year.

ATHLETIC GROUND. The Athletic Ground of the Medical School is within ten minutes' walk of the Hospital, and has accommodation for cricket, football, hockey and lawn tennis.

SCHOOL HOSTEL. "The Platanes," standing in large grounds, with three lawn tennis courts, provides residence for 80 students, and is within five minutes' walk of the Hospital; but is not available during the war.

The Dental School provides full Courses, given in co-operation with King's College, in preparation for Dental Degrees and Diplomas.

For Particulars, Calendar of the School, and Appointments to see the School and Hospital, application should be made to the Secretary, S. C. RANNER, M.A., King's College Hospital Medical School, Denmark Hill, London, S.E. 5.

Westminster Hospital Medical School

(University of London)

The new and enlarged School was completed in May, 1939, in order to meet the demands of the latest developments in medical education. The buildings offer all the facilities required by the student for his social life, and the lecture theatres, class rooms, and laboratories are specially designed for his instruction.

SCHOLARSHIPS.—The David de Souza Scholarship to the value of £25 per annum is awarded on the results of an examination in Applied Physiology held in September. Four Scholarships to the value of £75 each are awarded on the result of an examination held in May of each year in First Year Subjects. Four Scholarships are also awarded annually as the result of examinations in Anatomy and Physiology in April and September.

FEES.—Entrance fee, 13 guineas (for those taking Clinical studies only, 8 guineas). Annual fee, 44 guineas, which includes membership to the Sports Union Club with its various branches—football, cricket, tennis, hockey, swimming, fencing, boxing, sailing, squash rackets, rowing, and Guthrie Society. The Sports Ground is within 20 minutes of the Hospital.

RESIDENT APPOINTMENTS.—Paid appointments as Medical, Surgical, and Obstetric Registrars, Casualty Officers, House Physicians, House Surgeons, and Anæsthetist are available for Students upon qualification. There are excellent opportunities for research work in the endowed Carlill Laboratories. The number of students is strictly limited to ensure the maximum advantages of individual clinical teaching and to afford the large majority of those who qualify the opportunity to secure one of these very valuable appointments.

The Dean or Sub-Dean will be pleased to arrange for intending Students and Parents to inspect the Hospital and Medical School at any time.

Only male students are admitted.

A Prospectus and full particulars may be obtained on application to the Dean—

G. H. MACNAB, M.B., Ch.B., F.R.C.S.,
Westminster Hospital Medical School, Horseferry Road,
Westminster, London, S.W.1. *Telephone:* VICtoria 6041-2.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

TELEPHONE—EUSTON 5050 (7 lines).

(UNIVERSITY OF LONDON), UNIVERSITY ST., GOWER ST., W.C.1.

THE WINTER SESSION will commence on Tuesday, 3rd October, 1944.

THE SCHOOL IS FOR FINAL STUDIES only. STUDENTS are prepared for the degrees of the Universities of—OXFORD, CAMBRIDGE, LONDON, and DURHAM, and for the Diplomas of other qualifying bodies.

FEES.—The fees for the complete Clinical Course are £135 9s. Oxford or Cambridge Students who have completed their Course in Pathology, £120 9s. The fees are payable, if desired, in three annual instalments of £45 3s. or £40 3s. respectively. There are no extras, as the fees include (i) Courses of Instruction in Pharmacy, Vaccination, and Fevers; (ii) Life subscription to the Medical Society; (iii) Subscription to the U.C.H. Magazine.

SCHOLARSHIPS, EXHIBITIONS and Prizes (value over £1000) are awarded annually. Among the most important are:—

I. GOLDSMID ENTRANCE SCHOLARSHIPS, entitling the holder to the Final Course of Medical Study, are offered for competition annually in July, and are open to Students who are preparing for the Degrees of the Universities of London, Oxford, Cambridge, Durham, or other British Universities, or for the Diplomas of the Royal Colleges of Physicians and Surgeons.

II. GOLDSMID ENTRANCE EXHIBITION (value £80), entitling the holder to a reduction by £80 of the fees due for the Full Course of Final Medical Study.

III. FILLITER ENTRANCE SCHOLARSHIP IN PATHOLOGY (value £52 10s.), entitling the holder to a reduction by £52 10s. of the fees due for the Full Course of Final Medical Study.

Candidates will be examined in any two of the following subjects: Anatomy, Physiology, General Pathology, and Bio-Chemistry. Candidates need take the examination in Pathology alone, if they desire to enter only for the Filliter Entrance Scholarship in Pathology.

All further information and Prospectus can be obtained from the Secretary, and the Dean can be interviewed at any time by appointment.

Dean—S. COCHRANE SHANKS, M.D., F.R.C.P., F.F.R. *Vice-Dean*—PROF. S. J. COWELL, M.B., F.R.C.P.
Sub-Dean for Dental Students—ALAN SHEFFORD, O.B.E., L.D.S. R.C.S. Eng. *Secretary*—R. SLOLEY.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE
(UNIVERSITY OF LONDON).

WINTER SESSION begins October 2nd, 1944.

WAR-TIME ARRANGEMENTS.

All the **pre-clinical** Departments of the College are now temporarily established at Cambridge, where full courses have been arranged to meet the requirements of the Regulations of the University of London.

The **clinical** work of the senior students continues to be based on St. Bartholomew's Hospital, but is also carried on in two large Hospitals in Sector III of the Emergency Medical Service, viz., at Southgate and St. Albans, which provide a larger number of beds than normally. Adequate facilities for the teaching of Pathology and Midwifery have been arranged. All the Out-patient Departments at St. Bartholomew's are open.

Special arrangements are made for the housing of students.

A full Staff of clinical teachers is distributed over the Hospitals. Lecture courses are arranged in all Hospitals.

STUDENTS' UNION.

The Union possesses a Club Ground of seventeen acres at Chislehurst, and athletic amenities are available on the newly purchased site in Charterhouse Square, five minutes' walk from the Hospital.

HIGHER EXAMINATIONS.

Special Classes are held for **F.R.C.S.**, etc.

For further particulars apply, personally or by letter, to—

THE DEAN OF THE MEDICAL COLLEGE,
ST. BARTHOLOMEW'S HOSPITAL, LONDON, E.C.1.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS

58, Queen Anne Street, LONDON, W.1

EXAMINATIONS FOR THE MEMBERSHIP ARE HELD IN JANUARY AND JULY.—Application to sit for the examination must be made at least four months in advance as the clinical work of the candidate must be investigated by the Examination Committee and, if approved, case records accepted before the candidate is allowed to proceed to the examination. The case records and commentaries may be presented at any time, but not less than nine weeks and not more than three years before the date fixed for the examination.

EXAMINATIONS FOR THE DIPLOMA ARE HELD IN MARCH AND OCTOBER.—Application must be made at least one month prior to the date of the examination.

Copies of the Regulations for the Membership and the Diploma can be obtained from the Honorary Secretary, at the above address.

WEST LONDON HOSPITAL MEDICAL SCHOOL

UNDERGRADUATE STUDENTS (at present women only) reading for University Degrees in Medicine are accepted for the Clinical Period of study only

For further particulars apply to

The Dean, West London Hospital Medical School, 1 & 3 Wolverton Gardens, Hammersmith, W.6

THE MIDDLESEX HOSPITAL MEDICAL SCHOOL

(UNIVERSITY OF LONDON)

The Hospital and Medical School are fully equipped for teaching the entire medical curriculum, including instruction in Maternity Wards and all Special Departments.

SCHOLARSHIPS AND PRIZES

Two ENTRANCE SCHOLARSHIPS, value £100 each, and Four UNIVERSITY SCHOLARSHIPS, value £100 each, are awarded annually. In addition numerous Prizes are also awarded each year and exceed £1,000 in value.

The Tutors assist all Students, especially those who are preparing for Examinations, without extra fee.

Special attention is given to Students studying for Higher Degrees and Diplomas.

Common Rooms, a Gymnasium, and a Restaurant are provided in the School Buildings. A Squash Racquets Court is available in the Hospital.

Athletic Ground: Chislehurst, Kent.

The Students' Amalgamated Clubs include Rugby and Association Football, Golf, Cricket, Hockey, Sailing, Fencing, etc., etc.

SESSIONS 1944-45

Classes begin on the 2ND OCTOBER. Clinical Appointments are made every three months, beginning on the 1st November, and are held at the Middlesex Hospital, and at the Sector Hospitals at Aylesbury, Mount Vernon Hospital, Northwood, and Central Middlesex Hospital, Acton Lane, London.

Further particulars, Scholarship Regulations, and detailed Prospectus may be obtained on application to R. A. FOLEY, F.C.C.S., School Secretary, Middlesex Hospital, W.1.

H. E. A. BOLDERO, M.A., D.M., F.R.C.P., Dean of the Medical School.

MASTERY OF MIDWIFERY

OF THE SOCIETY OF APOTHECARIES OF LONDON

(M.M.S.A.)

The Mastery of Midwifery is designed to give evidence of intensive study and practical experience in **Ante-Natal Care, Midwifery, and Infant Welfare** and their relation to **Hygiene and Preventive Medicine.**

The Examination, which is Written, Oral and Clinical, is held in May and November.

Regulations and forms of application for admission to the examinations may be obtained from:—

THE REGISTRAR
THE SOCIETY OF APOTHECARIES
BLACK FRIARS LANE, E.C.4

LONDON (Royal Free Hospital) SCHOOL of MEDICINE for WOMEN

(University of London)

HUNTER ST., BRUNSWICK SQ., LONDON, W.C.1

ELIZABETH BOLTON, C.B.E., M.D., B.S., Dean

Full Courses are arranged for the London M.B., B.S. Degrees and certain Examinations of other qualifying bodies.

The Clinical Course is pursued at the Royal Free Hospital, and at present at its Emergency Medical Service Base Hospital, Arlesey, Beds, with additional experience at some special hospitals.

Appointments at the Hospital and Medical School are open to Students after qualification.

Scholarships, Bursaries, and Prizes of the value of £2000 are awarded annually.

The Session begins on October 1st each year
Application for admission must be made before January 1st for the following October

The Prospectus and full information can be obtained from the Warden and Secretary.

THE ROYAL DENTAL HOSPITAL OF LONDON School of Dental Surgery

(University of London)

LEICESTER SQUARE, LONDON, W.C.2

Men and Women Students are admitted for the curriculum for the B.D.S. Degree and the L.D.S. Diploma in October, January and May.

HOSPITAL PRACTICE.

The School is furnished with modern equipment, and the Clinic of the Hospital is unrivalled. Students may attend the operations in the In-Patient Department, and chair-side instruction is given in Advanced Operative Technique and Orthodontics.

DENTAL PROSTHETICS.

The Mechanical Laboratory is a spacious and fully equipped department, under the direction of the Lecturer in Prosthetics.

HOUSE APPOINTMENTS.

Six Senior House Surgeons and fifteen ordinary House Surgeons are appointed every year.

SCHOLARSHIPS.

A number of Scholarships, Bursaries and Prizes are awarded annually, including an open Entrance Scholarship of £50.

Applications for further particulars and School Calendar are invited by THE DEAN.

UNIVERSITY OF LONDON

Ophthalmic Hospital Medical School

ROYAL LONDON OPHTHALMIC HOSPITAL

(Moorfields Eye Hospital), CITY ROAD, E.C.1

Qualified Medical Practitioners and Registered Medical Students may enter on the Practice of the Royal London Ophthalmic Hospital (Moorfields) at any time, and are, on certain conditions, eligible for appointment as Chief Clinical Assistant, Clinical Assistant, and Junior Assistant.

Courses of Instruction, extending over a period of five months, begin in OCTOBER and MARCH.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY AND OTHER DEGREES IN OPHTHALMOLOGY.

A COMPLETE CURRICULUM IS SPECIALLY DESIGNED TO MEET THE REQUIREMENTS OF CANDIDATES ENTERING FOR THESE EXAMINATIONS.

Fees for the Practice of the Hospital: perpetual, £5 5s.; three to six months, £3 3s.; two months, £2 2s.; one month, £1 1s.

Clinical work begins at 9 A.M. daily. Operations are performed between 10 A.M. and 1 P.M.

For further particulars apply to the SECRETARY to the Medical School at the Royal London Ophthalmic Hospital, City-road, E.C.1; or to the Dean, ROBERT DAVENPORT, F.R.C.S.

UNIVERSITY COLLEGE HOSPITAL DENTAL SCHOOL

NATIONAL DENTAL HOSPITAL

GREAT PORTLAND STREET, W.1

The WINTER SESSION commences TUESDAY, OCTOBER 3rd, 1944.

This Hospital and School, situated in the centre of a large population, and within a few minutes of University College Hospital, has recently been reorganised and equipped on the highest standard of modern requirements, and is admirably adapted for the teaching of students in every branch of the Science and Art of Dental Surgery.

The mechanical laboratory, conservation room, and X-rays department are replete with all the latest approved appliances.

Students (men and women) enter as students of University College Hospital, and attend classes in anatomy and physiology at University College Hospital Medical School.

Each student serves as a dresser in the extraction, anæsthetic, conservation and X-rays departments which provides him with the opportunity of observing and actually carrying out the methods of work in all branches.

Four house surgeons are appointed half-yearly.

The Calendar, containing full information as to lectures, fees, prizes, &c., may be had on application to the Sub-Dean of Dental Students, ALAN SHEFFORD, O.B.E., L.D.S. R.C.S., who attends the University College Hospital Medical School, University Street, Gower Street, W.C.1, on Fridays at 11 A.M.

CLASSES AND PRIVATE TUITION

1st MEDICAL

MATRICULATION

SCHOOL CERTIFICATE

INTERMEDIATE SCIENCE

PRE-MEDICAL

Write for full particulars to the Principal,
Geo. Goodchild, M.A., B.Sc.

UNIVERSITY
TUTORIAL COLLEGE
Crowndale Road, London, N.W.1.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

The EXAMINATIONS for the LICENCE of the College (as a single qualification) for the ensuing year will be held on the FIRST WEDNESDAY and the following days of every month (except September and October).

Candidates must be registered Medical Practitioners. Applications must be lodged with the Secretary one week before the date of the Examination at which they propose to appear.

The EXAMINATIONS for the MEMBERSHIP of the College are held quarterly during the SECOND WEEK of JANUARY, APRIL, JULY and OCTOBER.

Candidates for the MEMBERSHIP must submit their applications and testimonials to the Secretary one month before the date at which they wish to appear for Examination.

For the Regulations in regard to the various qualifications granted by the College, and all other information, application may be made to the Secretary.

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UNIVERSITY OF BRISTOL

FACULTY OF MEDICINE

THE SESSION commences on
28TH SEPTEMBER, 1944.

The University grants the Degrees of Bachelor of Medicine and Surgery (M.B., Ch.B.), Master of Surgery (Ch.M.), Doctor of Medicine (M.D.), Bachelor of Dental Surgery (B.D.S.), and Master of Dental Surgery (M.D.S.), as well as a diploma in Dental Surgery (L.D.S.) and a Midwife Teachers' Certificate, and holds a Training Course for Health Visitors.

The lectures and laboratory courses which are given in the University are designed to cover the curricula for the University's qualifications.

Hospital Practice and Clinical Instruction are provided in the Hospitals in the City, associated with the University for this purpose, and Students have exceptional opportunities of studying the practice of medicine from a large variety of cases.

Women are admitted to all Classes, Lectures, and Laboratory Practice, and attend them with men. The Halls of Residence for Men and for Women Students are situated near the University.

Inclusive fees—

For the M.B., Ch.B. curriculum ..	£289 13s. 6d.
For the B.D.S. curriculum, including Mechanical Laboratory	£281 16s. 0d.
For the L.D.S. curriculum, including Mechanical Laboratory	£262 12s. 0d.

For additional particulars apply to the Dean of the Medical Faculty.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.
ROYAL COLLEGE OF SURGEONS OF EDINBURGH.
ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Copies of Regulations for the TRIPLE QUALIFICATION (L.R.C.P. Ed., L.R.C.S. Ed., and L.R.F.P. & S.G.), containing dates of Professional Examinations for the year 1944–45 Curriculum, &c., may be had on application to the Registrar, Surgeon's Hall, 18, Nicolson-street, Edinburgh, 8, or to the Registrar, 242, St. Vincent-street, Glasgow, C.2.

INCORPORATED 1505.
ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

COPIES OF REGULATIONS for the FELLOWSHIP, LICENCE, HIGHER DENTAL DIPLOMA and LICENCE in DENTAL SURGERY, containing Dates of Examinations, may be had on application to—

DAVID THOMSON, Clerk of the College.
Surgeons' Hall, 18, Nicolson-street, Edinburgh, 8.

BIRMINGHAM SCHOOL OF DENTISTRY.

UNIVERSITY OF BIRMINGHAM AND BIRMINGHAM DENTAL HOSPITAL.

DEAN OF THE FACULTY OF MEDICINE: LEONARD G. PARSONS, M.D., F.R.C.P.
DEAN OF THE DENTAL HOSPITAL: C. H. HOWKINS, C.B.E., D.S.O., M.R.C.S., L.R.C.P., L.D.S.
PROFESSOR OF DENTAL SURGERY: H. F. HUMPHREYS, K.H.P., O.B.E., M.C., T.D., D.L., M.B., Ch.B., M.D.S.

The Session will commence on MONDAY, OCTOBER 2nd, 1944.

DEGREES AND DIPLOMA IN DENTAL SURGERY.

The Degrees of Bachelor of Dental Surgery (B.D.S.) and Master of Dental Surgery (M.D.S.) and the Diploma in Dental Surgery (L.D.S.) are open to students who follow the requisite courses in the University.

SCHOOL OF DENTISTRY.

The School of Dentistry, in conjunction with the Birmingham United Hospital, affords a complete curriculum for the Dental Diplomas and Dental Degrees of the University and other Licensing Bodies.

The Dental Hospital is fully equipped for the training of Students in Prosthetic and Operative Dentistry.

A DENTAL SCHOLARSHIP of the value of £37 10s. 0d. is offered annually by the University.

For syllabus and further information, application should be made to the Registrar, or to the Professor of Dental Surgery, The Medical School, Birmingham, 15.

THE UNIVERSITY OF LEEDS

SCHOOL OF DENTISTRY

The First Term begins on **September 26th, 1944.**

The degrees of B.Ch.D. and M.Ch.D., as well as a diploma, L.D.S., are conferred by the University.

The systematic Classes and Lectures are held in the School of Medicine and School of Dentistry of the University, while the clinical instruction is given in the Leeds General Infirmary and Dental School Hospital. The combined courses of study are arranged to meet the University Regulations in the first instance, but they also afford every opportunity for study to students preparing for the dental examinations of other Licensing Bodies.

For prospectus or further particulars application should be made to:—
The Warden, School of Dentistry, Leeds, 1.

UNIVERSITY OF ABERDEEN

SESSION 1944-45

The WINTER TERM for Students in all Faculties will open on TUESDAY, 17TH OCTOBER, 1944.

NOTE—ALL MALE STUDENTS (INCLUDING THOSE ENTERING THE UNIVERSITY FOR THE FIRST TIME IN OCTOBER), OTHER THAN THOSE ALREADY ENROLLED IN THE MEDICAL UNIT OF THE SENIOR TRAINING CORPS, MUST REPORT AT THE HEADQUARTERS OF THE SENIOR TRAINING CORPS OR UNIVERSITY AIR SQUADRON AT 9 A.M. on TUESDAY, 10TH OCTOBER, 1944.

H. J. BUTCHART, *Secretary*

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The WINTER SESSION will begin on 11th October, 1944.

All information regarding Courses for the Medical and Dental Degrees, for the Diploma in Public Health, for the Diploma in Gynaecology and Obstetrics, and for the Diploma in Psychological Medicine may be obtained on application to the REGISTRAR of the School of Physic, Trinity College, Dublin.

THE QUEEN'S UNIVERSITY of BELFAST

FACULTY OF MEDICINE—SESSION 1944-1945

Vice-Chancellor: D. LINDSAY KEIR, M.A.
Dean of Faculty: Professor W. J. WILSON.

Anatomy.—T. Walmsley, M.D., F.R.S.E.
Operative Surgery and Applied Anatomy.—H. P. Malcolm, M.B., M.Ch.
Physiology.—H. Barcroft, M.A., M.D.
Medicine.—W. W. D. Thomson, M.D., B.Sc., F.R.C.P. (Lond.).
Surgery.—P. T. Crymble, M.B., F.R.C.S. (Eng.).
Materia Medica and Therapeutics.—J. T. Lewis, M.D., B.Sc., F.R.C.P. (Lond.).
Pharmacology—E. B. C. Mayrs, M.D., D.P.H.
Midwifery and Gynæcology.—C. G. Lowry, M.D., F.R.C.S.I.
Pathology.—J. H. Biggart, M.D., D.Sc.
Medical Jurisprudence.—J. H. Biggart, M.D., D.Sc.
Ophthalmology and Otology.—J. R. Wheeler, M.B., F.R.C.S. (Edin.).
Public Health Administration.—C. S. Thompson, M.D., D.P.H.
Public Health.—W. J. Wilson, B.A., D.Sc., M.D., D.P.H.
Physics.—K. G. Emeleus, M.A., Ph.D.; R. H. Sloane, D.Sc.
Zoology.—T. T. Flynn, D.Sc.; G. Williams, M.Sc.
Botany.—James Small, D.Sc.; Mary J. Lynn, D.Sc.
Chemistry.—A. W. Stewart, D.Sc.
Biochemistry.—D. C. Harrison, D.Sc., Ph.D.
Organic Chemistry.—H. Graham, D.Sc.
Vaccination.—S. R. Armstrong, M.D.
Bacteriology.—N. C. Graham, M.B.
Psychological Medicine.—Dorothy M. Gardner, M.B., D.P.H., D.P.M.
Infant Hygiene and Diseases of Children.—F. M. B. Allen, M.D., F.R.C.P. (Lond.).

The Lectures of WINTER SESSION 1944–45 will commence on Monday, 2nd October. The Fees for a complete Medical Course (including Hospital Fees) amount to about £250. Scholarships will be open for competition at the Winter and Summer Professional Examinations. The Entrance Scholarship Examinations are held in June of each year.

RIDDEL HALL, situated a short distance from the University, offers residence for women students. Full particulars can be obtained from the Warden, Riddel Hall, Stranmillis, Belfast.

HOSPITALS RECOGNISED FOR CLINICAL INSTRUCTION

ROYAL VICTORIA HOSPITAL, MATER INFIRMORUM HOSPITAL, BELFAST UNION INFIRMARY, CITY FEVER HOSPITALS, PURDYSBURN, and UNION FEVER HOSPITAL, ROYAL MATERNITY HOSPITAL, BELFAST HOSPITAL FOR SICK CHILDREN, ULSTER HOSPITAL FOR DISEASES OF CHILDREN AND WOMEN, BELFAST OPHTHALMIC HOSPITAL AND EYE AND EAR DISPENSARY, BENN ULSTER EYE, EAR AND THROAT HOSPITAL, SAMARITAN HOSPITAL, FORSTER GREEN HOSPITAL FOR DISEASES OF THE CHEST, BELFAST HOSPITAL FOR DISEASES OF THE SKIN, BELFAST MENTAL HOSPITAL.

The Calendar, containing full information regarding the new Regulations for Courses, Fees, Scholarships, etc., can be had on application to the Bursar, The Queen's University, Belfast, price 3s., postage 6d. extra.

RICHARD H. HUNTER, M.D., M.Ch., Ph.D., Secretary.

UNIVERSITY OF EDINBURGH

FACULTY OF MEDICINE

The University grants the Degrees of Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), Doctor of Medicine (M.D.) and Master of Surgery (Ch.M.).

Opportunities for Hospital Practice are afforded in Hospitals in the City and upwards of 3800 beds are available for Clinical Instruction of Students of the University.

The approximate cost of the course, extending over five years, for the Degrees of M.B., Ch.B., is £270. Prospective students are normally required to make application for admission on a prescribed form not later than 1st July of the year in which they wish to enter, but men students who will reach the age of 18 years and women students who will reach the age of 19 years between 1st January and 31st August of the year in which they wish to begin the course should apply by the middle of December of the previous year.

The University also grants a Diploma in Medical Radiology, and a full Course of instruction for the Diploma is provided.

In the various Departments of the Faculty of Medicine provision is made for research by students of graduate standing.

A copy of the Faculty Programme may be obtained from the Dean of the Faculty of Medicine, University, Edinburgh, 8. Programmes regarding Degrees in other Faculties may be obtained from the Matriculation Office, University, South Bridge, Edinburgh, 8.

W. A. FLEMING, Secretary to the University.

CRICHTON ROYAL, DUMFRIES

FOR NERVOUS AND MENTAL DISORDERS

Cases of Alcoholism and Drug Addiction are admitted. Every facility for individual treatment on the most modern lines. As the Hospital is well endowed, terms are exceptionally moderate.

Medical Certificates given anywhere in the British Isles are valid for admission of patients.

Physician Superintendent: P. K. MCCOWAN, J.P., M.D., F.R.C.P., D.P.M., Barrister-at-Law. Tel.: Dumfries 1119.

FENSTANTON

at "FIVE DIAMONDS," Chalfont St. Giles, Bucks

A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (See *Medical Directory*, p. 3493.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All forms of treatment available. Fees from 4 gns. per week upwards according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.

Apply to Dr. J. A. SMALL. Telephone: Norwich 20080

HAYDOCK LODGE,

NEWTON-LE-WILLOWS, LANCASHIRE.

For the reception and treatment of PRIVATE PATIENTS of both sexes of the UPPER AND MIDDLE CLASSES suffering from Mental and Nervous Disorders, Alcoholism and Drug Addiction, either voluntarily, temporarily, or under certificate. Patients are classified in separate buildings according to their mental condition. Situated in park and grounds of 400 acres. Self-supported by its own farm and gardens in which patients are encouraged to occupy themselves. Every facility for indoor and outdoor recreation. For terms, prospectus, etc., apply MEDICAL SUPERINTENDENT. *Telephone:* Ashton-in-Makerfield 7311. *Telegraphic Address:* Wootton, Ashton-in-Makerfield.

THE OLD MANOR, SALISBURY

Telephone: 3216 & 3217

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

Extensive grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

CONVALESCENT HOME AT BOURNEMOUTH

standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

Illustrated Brochure on application to the Medical Superintendent, The Old Manor, Salisbury.

UNIVERSITY OF ST. ANDREWS

Chancellor—The Rt. Hon. THE EARL BALDWIN OF BEWDLEY, K.G., P.C., LL.D.

Rector—Air Vice-Marshal Sir DAVID MUNRO, K.C.B., C.I.E., M.A., M.B., Ch.B., F.R.C.S.E., LL.D.

Vice-Chancellor and Principal—Sir JAMES COLQUHOUN IRVINE, C.B.E., Sc.D., D.Sc., LL.D., D.C.L., F.R.S.

The UNIVERSITY OF ST. ANDREWS includes the UNITED COLLEGE OF ST. SALVATOR AND ST. LEONARD AND ST. MARY'S COLLEGE IN ST. ANDREWS, UNIVERSITY COLLEGE, DUNDEE, THE ADVANCED MEDICAL SCHOOL IN DUNDEE, AND THE DUNDEE DENTAL SCHOOL.

FACULTY OF MEDICINE

Dean and Adviser of Studies at Dundee—Professor DANIEL FOWLER CAPPELL, M.D.

Adviser of Studies at St. Andrews—Professor P. T. HERRING, M.D.

The University confers the following DEGREES AND DIPLOMAS:—M.B., Ch.B., M.D., Ch.M., Ph.D., D.P.H. (all open to men or women).

Application for admission as a medical student should reach the Dean not later than 30th June in any year.

SESSION 1944–45 commences on 10th OCTOBER, 1944. The whole curriculum may be taken at Dundee, or the first two years may be taken in St. Andrews and the remaining three in Dundee.

CLINICAL INSTRUCTION.—Ample facilities at Dundee Royal Infirmary (450 beds), Maryfield Hospital (330 beds), King's Cross Hospital (250 beds), Ashludie (120 beds), Dundee Mental Hospital (640 beds), Dundee Eye Institution, Dental Hospital, and other Medical and Surgical Institutions in Dundee.

HOSPITAL APPOINTMENTS.—Numerous resident hospital appointments are available in the above institutions.

RESIDENCE HALLS.—For Men in St. Andrews, for Women in St. Andrews and Dundee. The William Low Residence for Medical Students at Dundee is available for students during Clinical study.

STUDENTS' UNIONS.—Athletic Grounds and Gymnasia in St. Andrews and in Dundee.

BURSARY (SCHOLARSHIP) COMPETITIONS.—*For Dundee:* entry 20th April; Examinations May. *For St. Andrews:* entry 2nd May; Examinations June.

BURSARIES EXCLUSIVELY FOR MEDICAL STUDENTS.—*At St. Andrews:* Taylour Thomson (for women), 2 of £40 and 1 of £30 for 5 years; Malcolm (for men and women), £40 for 5 years, vacant annually. *At Dundee:* Hepburn (for men or women), £25 for three years.

BURSARIES FOR WHICH MEDICAL STUDENTS ARE ELIGIBLE.—*At St. Andrews:* About 10 Bursaries ranging in value from £50 to £20, tenable for 3 or 4 years, vacant annually, and fourth year Bursaries of £50, £30, and £22. *At Dundee:* Nine Entrance Bursaries of from £50 to £40 for four years, and four Bursaries of from £30 to £25 for allocation in the remaining years of the course. In addition there are four scholarships of £100 available for graduates.

RESIDENTIAL ENTRANCE SCHOLARSHIPS FOR MEN.—*At St. Andrews:* Seven or eight of £100 competed for annually in June. Medical students are eligible.

PRELIMINARY EXAMINATION.—August and March. Entries July 21st and February 6th.

Fees for complete M.B., Ch.B. Course, exclusive of Examination Fees, Hospital Fees, etc., £192.

PROVISION FOR POST-GRADUATE STUDY AND RESEARCH.

Full information may be obtained from the SECRETARY OF THE UNIVERSITY, 71, North-street, St. Andrews, or the DEAN OF THE FACULTY OF MEDICINE, Medical School, Dundee.

SCHOOL OF DENTISTRY

Adviser of Studies—Professor H. GORDON CAMPBELL, L.R.C.P., L.R.C.S., L.D.S., Dental Hospital.

The University confers the DEGREES of B.D.S., M.D.S., and Ph.D. and the Diplomas of L.D.S. and D.P.D.

Full facilities for instruction are available in the Scientific Departments of the University, the Advanced Medical School, and Medical and Surgical Institutions.

The Dental Hospital is fully equipped for the training of Students in Mechanical, Prosthetic, and Operative Dentistry.

Financial assistance is available for students.

Full information may be obtained from the ADVISER OF STUDIES, DENTAL HOSPITAL, DUNDEE.

The University, St. Andrews, July, 1944.

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind.

Terms moderate. Apply to Resident Medical Superintendent. Telegrams: ADAM WEST MALLING. Telephone No. 2: MALLING.

UNIVERSITY EXAMINATION POSTAL INSTITUTION

17, RED LION SQUARE, LONDON, W.C.1

Over 50 years' experience

POSTAL COACHING FOR ALL MEDICAL EXAMINATIONS

MEDICAL PROSPECTUS (24 pages)

sent gratis, along with List of Tutors, &c., on application to the Principal, 17, Red Lion Square, London, W.C.1. (Telephone: HOLborn 6318).

ROYAL EARLSWOOD INSTITUTION

REDHILL, SURREY

For MENTAL DEFECTIVES of all ages

Training under medical supervision. Schools, Farm, Trade Workshops, Recreations. Fees, £125 to £375 p.a. Election by votes of subscribers at reduced terms for necessitous trainable cases.

Apply, Secretary. Tel.: Redhill 344.

SPRINGFIELD HOUSE

'Phone: BEDFORD 3417. **Near BEDFORD**

For Mental Cases with or without Certificates.

Ordinary Terms: Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT.

CITY OF LONDON MENTAL HOSPITAL

Near DARTFORD, KENT

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards

THE COTSWOLD SANATORIUM

On the Cotswold Hills, seven miles from Cheltenham, Stroud and Gloucester. Fully equipped for the treatment of all forms of Tuberculosis.

Terms: 6 to 10 guineas per week, inclusive.

Full particulars from MEDICAL SUPERINTENDENT, COTSWOLD SANATORIUM, CRANHAM, GLOUCESTER.

Telephone: Witcombe 2181 Telegrams: "Hoffman, Birdlip"

THE MAGHULL HOMES FOR EPILEPTICS (Inc.)

MAGHULL, Near LIVERPOOL

Open Air Occupation and Recreation for Patients. Farming, Gardening, Football, Cricket, Tennis, Bowls, etc. School recognised by Board of Education.

FEES—1st Class (men only)	(from £3	per week
2nd Class (men and women)	„ 37/6	„
3rd Class (men and women) supported by—		
Public Assistance Committees	„ 27/6	„
Education Committees	„ 33/6	„
Private	„ 21/-	„

For further particulars apply to—

G. EDGAR GRISEWOOD, A.C.A., 90, Exchange Street East, LIVERPOOL, 2.

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5

Telegrams: "PSYCHOSIS, LONDON" **FOR THE TREATMENT OF MENTAL DISORDERS** *Telephone:* RODNEY 4343 (3 lines)

Completely detached Villas for mild cases. Voluntary Patients received. Twenty acres of grounds; own garden produce. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actino-therapy, prolonged immersion baths, shock and also modified insulin treatment. Chapel.

Senior Physician, Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are strictly moderate, may be obtained upon application to the Secretary

The Convalescent Branch is HOVE VILLA, BRIGHTON and is 200 ft. above sea-level

PECKHAM HOUSE, 112, Peckham Road, London, S.E.15

Telegrams: "Alleviated, London" **Telephone: Rodney 2641-2642**

A Private Mental Hospital, for Ladies and Gentlemen suffering from Nervous and Mental Illness, where the amenities of a comfortable home are combined with full investigation and every well-established modern treatment.

Terms from £4.4.0 weekly.

Illustrated Prospectus may be obtained from the Physician Superintendent.

ST. ANDREW'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, bio-chemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Piombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

RUTHIN CASTLE, NORTH WALES

A Private Clinic, the first in Great Britain, for investigation and treatment of all forms of disease, except infectious and mental

There is a steel and concrete Air Raid Shelter with heating and a lift to all floors

Inclusive charges — Apply SECRETARY — Telephone: Ruthin 66

COURT HALL, KENTON, near EXETER

FOR THE TREATMENT OF EIGHT LADIES, VOLUNTARY, TEMPORARY AND CERTIFIED PATIENTS

CLIFFDEN, TEIGNMOUTH

FOR EARLY AND CONVALESCENT CASES — Recreational Therapies are held daily by skilled Leaders

The house stands high with spacious balconies and extensive views of the South Devon Coast. Beautiful garden. Own Dairy in 25 acres. Private road to beach. There is also a charming house, EBWORTHY, MANATON, DARTMOOR, situated in 20 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—STARCROSS 259 and TEIGNMOUTH 289

CHEADLE ROYAL CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES, and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

THE object of this Hospital is to provide the most efficient means for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT *Telephone*: GATLEY 2231

CHISWICK HOUSE,

PINNER, MIDDLESEX.

Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

DOUGLAS MACAULAY, M.D., D.P.M.

LONDON CHEST HOSPITAL, Victoria Park, E.2. House SURGEON (B2), Male or Female, required on 1st November, with previous surgical experience, preferably thoracic. Salary £150 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent by 16th September to the Secretary.

ST. JOHN'S HOSPITAL, Lewisham, S.E.13. Applications are invited from registered medical practitioners, Male or Female, for the appointments of CASUALTY OFFICER (A) and HOUSE PHYSICIAN (A), now vacant. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointments will be for a period of 6 months; otherwise will be for a period of 3 months.

Applications, with copies of testimonials, should be sent as soon as possible to: J. C. GILBERT, Secretary-Superintendent.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great PORTLAND STREET, W.1. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON (B2), duties to commence immediately. Salary at the rate of £200 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when appointment will be limited to 6 months. Also practitioners holding B2 posts and ineligible for military service may apply.

Applications should reach the Secretary not later than 28th August.

ROYAL FREE HOSPITAL, Gray's Inn-road, London, W.C.1. Applications are invited from registered medical practitioners for the whole-time appointment of RESIDENT ANÆSTHETIC REGISTRAR (B1) at Three Counties Emergency Hospital, Arlesey, Beds. Applicants must not be more than 10 years qualified. Remuneration from £250 to £550 p.a., according to experience, payable by the E.M.S. Duties to commence 1st October. R practitioners now holding B1 posts and rejected by the R.A.M.C., also suitably qualified R and W practitioners who now hold B2 posts, may apply.

Applications, stating age, qualifications, and accompanied by copies of 3 recent testimonials, should be sent on or before 5th September to: RICHARD T. BARTLEY, Secretary.

WEIR HOSPITAL, Weir-road, Balham, S.W.12. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON (B2), vacant now. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent to the Honorary Secretary-Superintendent.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A). Salary is at the rate of £120 p.a., plus share of Ministry of Health allowance, with full residential emoluments. Duties to commence as soon as possible. To R and W practitioners the appointment will be for a period of 6 months.

Applications, giving full particulars, together with copies of 3 recent testimonials, to be sent as soon as possible to—

18th August, 1944. R. EDWARDES, Secretary.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. Applications are invited from registered medical practitioners, Male and Female, for the resident appointment of FRACTURE OFFICER (B1) for Out-patient Fracture Clinic, vacant 1st September, 1944. Duties will include work in the Rehabilitation Department. Preference will be given to candidates who have had previous experience in dealing with fractures. Salary at the rate of £250 p.a., with the usual residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, giving full particulars, together with copies of 3 recent testimonials, to be sent as soon as possible to—

18th August, 1944. R. EDWARDES, Secretary.

ROYAL CANCER HOSPITAL (Free), Fulham-road, LONDON, S.W.3. Applications are invited for the post of JUNIOR ASSISTANT RADIOTHERAPIST (B2). Salary according to experience but will not be less than £450 p.a. Applicants must be registered medical practitioners who hold a diploma in Medical Radiology. The appointment will be for a period of 12 months and subject to renewal, but to R and W practitioners holding A posts who may apply appointment will be limited to 6 months.

Applications to be made on a form which will be supplied by the Secretary, together with copies of 3 recent testimonials, which should be sent to the Secretary by Monday the 11th September.

HAMPSTEAD GENERAL HOSPITAL, N.W.3. Applications are invited from registered medical practitioners, Male and Female, for the appointment of CASUALTY MEDICAL OFFICER (B2), Out-patient Department, Camden Town, N.W.1, vacant 1st September, tenable for 6 months. Salary £100, plus board, lodging, and laundry, and allowance at £50 p.a. for duties in connexion with First-aid Post established there. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be downgraded temporarily to A. Practitioners qualified for more than 3 months and liable under the National Service Acts (males must be rejected by the R.A.M.C.) may also apply.

Applications on the prescribed form, with copies of 3 testimonials, to be returned not later than 30th August.

KENNETH A. F. MILES, House Governor.

THE SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.4. Applications are invited from registered medical Female practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1), with care of the Obstetric Department. Some gynæcological beds, out-patient clinics and administrative work, vacant 1st September. Applicants should have held house appointments. Minimum salary at the rate of £150 a year, with full residential emoluments. Suitably qualified W practitioners holding B2 appointments are invited to apply.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary as soon as possible.

THE SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.4. Applications are invited from registered medical Female practitioners for the undermentioned appointment, vacant 1st October: HOUSE PHYSICIAN (A). The appointment will be for a period of 6 months. Salary is at the rate of £100 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary at the hospital by Saturday, 16th September, 1944.

ROYAL LONDON OPHTHALMIC HOSPITAL (Moorfields Eye Hospital), City-road, London, E.C.1. Applications are invited for the post of THIRD HOUSE SURGEON (B1). Candidates must be registered medical practitioners and must be prepared to begin duties on the 1st November, 1944. Salary at the rate of £100 p.a., with board and residence in the hospital. The appointment is for a period of 6 months, and the candidate at the completion of that time will be eligible for appointment as Second House Surgeon, First House Surgeon, and subsequently as Senior Resident Officer for similar periods subject to the approval of the Central Medical Board Committee. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, with testimonials, stating age and qualifications, must be received not later than 15th September, 1944.

A. J. M. TARRANT, Secretary.

BOROUGH OF BERMONDSEY. Applications are invited from registered medical practitioners for the position of TEMPORARY ASSISTANT MEDICAL OFFICER. The salary will be at the rate of £600 p.a., rising by 2 annual increments to £700 p.a., together with war bonus, which on the commencing salary of £600 will be £49 8s. The post is a temporary one, and particulars of duties can be obtained from the Medical Officer of Health.

A form of application may be obtained from the undersigned, to whom the completed application should be delivered not later than the first post on Monday, 4th September, 1944.

S. E. FREEMAN, Town Clerk.

Municipal Offices, Spa-road, Bermondsey, S.E.16,
18th August, 1944.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.3. Applications are invited from registered medical practitioners, Male and Female, including suitably qualified R and W practitioners who now hold B2 posts, for the appointment of RESIDENT SURGICAL OFFICER (B1). Applicants must have held a resident hospital appointment, and R practitioners now holding B1 posts cannot be considered unless they have been rejected by the R.A.M.C. The appointment is for 12 months, commencing on 1st November. Salary at the rate of £150 p.a., with board and residence, and an additional £25 p.a. for services in connexion with paying patients.

Applications also invited for the following appointments from registered medical practitioners, Male and Female, including R and W practitioners who now hold A posts:—

HOUSE PHYSICIAN (B2). The duties include work in the Out-patient Department as well as in the wards, and the appointment is for 6 months, commencing on 1st November, with an honorarium of £50 and board and residence.

HOUSE PHYSICIAN (B2) at the Sanatorium at Frimley. The appointment is for 6 months, commencing on 1st November, with an honorarium of £50 and board and residence.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 1 or more recent testimonials, should reach the undersigned not later than Saturday, 9th September, 1944.

Brompton. F. G. ROUVRAY, Secretary.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN (Country In-patient Branch. 70 Beds.) Ashendene, Bayford, Herts. Applications are invited from registered medical practitioners, Male and Female, including R and W practitioners now holding A posts, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant 1st October, 1944. The appointment will be for 6 months. Salary is at the rate of £200 p.a., with full residential emoluments.

Application forms may be obtained from the undersigned, and should be returned, with copies of not more than 3 testimonials, on or before 16th September, 1944.

CHAS. H. BESSELL, General Secretary.

Queen Elizabeth Hospital, Hackney-road, E.2.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN, Hackney-road, E.2. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (A), vacant 1st October, 1944. Appointment will be for 6 months. Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Application form may be obtained from the undersigned, and should be returned, with copies of not more than 3 testimonials, on or before the 16th September, 1944.

CHAS. H. BESSELL, General Secretary.

THE ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. Applications are invited from registered medical practitioners, Male or Female, for the appointment of PART-TIME REGISTRAR to the E.N.T. Department, at a salary of £100 p.a. Appointment to commence approximately 15th September.

Applications for this appointment, with copies of 3 testimonials, to be sent to the Secretary by Wednesday, 6th September.

MIDDLESEX COUNTY COUNCIL. Visiting Radiologist required at Central Middlesex County Hospital, Park Royal, N.W.10, for 3 sessions weekly of approximately 3 hours each. Fee £3 3s. per session. Further particulars obtainable from Medical Director. Appointment, in first instance, is for period of emergency only.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to be made to the undersigned. Application forms not provided. Closing date 9th September, 1944. C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Assistant Pathologist (non-resident) required by West Middlesex County Hospital, Isleworth, Middlesex. Applications invited from registered medical practitioners with special knowledge and experience in hæmatology, biochemistry, and bacteriology. Commencing salary £650 p.a.; annual increments of £25 up to £800 p.a. considered. Additional cost-of-living bonus (now £50 p.a.). No other emoluments. Whole-time duties, such as County Council may require, under general supervision of Medical Director. Appointment unestablished, with possibility of becoming established later.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to be made to the undersigned. Application forms not provided. Closing date 9th September, 1944. C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Resident Assistant Medical OFFICER (B1) required by Harefield County Hospital, Harefield, Middlesex. Applications invited from registered medical practitioners who have held house appointments (including R and W practitioners holding B2 posts). Experience in chest work desirable. R and W practitioners ineligible unless rejected by R.A.M.C. Salary £400 by £25 to £475 p.a., plus cost-of-living bonus (now 19s. per week, less deduction for residential emoluments). Board, lodging, and laundry. Whole-time duties, such as Council may require, under supervision of Medical Director. Appointment is for 4 years only, subject to medical examination and 1 month's notice. Post vacant now.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to be made to the undersigned. Application forms not provided. Closing date 9th September, 1944. C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Resident Assistant Medical OFFICER (Anæsthetist, B1) required by North Middlesex County Hospital, Edmonton, N.18. Applications invited from registered medical practitioners (including R and W practitioners holding B2 posts) who have held resident appointments in general hospitals and had special experience in administering anæsthetics. Preference given to candidates with Diploma in Anæsthetics. R and W practitioners holding B1 posts ineligible unless rejected by R.A.M.C. Salary £400 by £25 to £475 p.a., plus cost-of-living bonus (now 19s. per week, less deduction for residential emoluments). Board, lodging, and laundry. Whole-time duties, such as Council may require, under general supervision of Medical Director, will consist mainly in administering anæsthetics. Appointment is for 4 years only, subject to medical examination and 1 month's notice. Post vacant immediately.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to be made to the undersigned. Application forms not provided. Closing date 9th September, 1944. C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

TILBURY HOSPITAL, Tilbury, Essex. Applications are invited from registered Male practitioners for the appointment of RESIDENT HOUSE SURGEON AND CASUALTY OFFICER (B1), vacant on or before 11th September. Applicants should have held appointments and had surgical experience. Salary is at the rate of £350 p.a., with full residential emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications with dates, experience, and details of previous appointments, with copies of 3 recent testimonials, should be sent to the undersigned immediately.

F. A. LYON, Administrator and Secretary.

Seamen's Hospital Society, Greenwich, S.E.10.

UNIVERSITY COLLEGE, London. Applications are invited for the post of DEMONSTRATOR IN ANATOMY. Medical qualification essential. Salary £350 p.a., plus war bonus. Duties to commence October, 1944.

Further particulars may be obtained from the Secretary, University College, Gower-street, London, W.C.1.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. A vacancy occurs for a CLINICAL ASSISTANT in the Ear, Nose and Throat Department.

Applications should be addressed to the Secretary.

KING'S COLLEGE, Strand, London, W.C.2. (University of LONDON.) King's College, London, will require in October next the services of a part-time LECTURER IN ANATOMY (3 afternoons a week). Salary £150.

Application should be made to the Secretary, King's College, Strand, W.C.2, on or before 13th September, 1944.

THE NELSON HOSPITAL, Merton, S.W.20. Applications are invited from registered medical practitioners, Male, for the appointment of HOUSE SURGEON (A), vacant 1st September, 1944. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise may be extended.

Applications to the Secretary.

HOUNSLOW HOSPITAL, Staines-road, Hounslow, Middlesex. Applications are invited for the post of HOUSE PHYSICIAN AND CASUALTY OFFICER (A). Duties to commence 18th September. Salary £150, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications should be addressed as soon as possible to—

E. H. HURST, Secretary.

BARKING EMERGENCY HOSPITAL. Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), now vacant. In addition to hospital duties opportunities for experience will be given by allocation of duties in connexion with the Corporation's public health services outside the Hospital. Salary £200 p.a., together with usual residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise will not exceed 1 year.

Applications, with recent testimonials, immediately to Medical Superintendent, Barking Hospital, Upney-lane, Barking, Essex.

E. R. FARR, Town Clerk.

THE ROYAL LIVERPOOL UNITED HOSPITAL. Applications are invited from registered medical practitioners for the temporary war-time appointment of full-time STIPENDIARY ASSISTANT PHYSICIAN. The main duties of the successful candidate will be at the Liverpool Royal Infirmary Branch of The Royal Liverpool United Hospital and private practice will not be permitted. Salary will be at the rate of £800 to £1000 p.a., according to merit and experience. Candidates should be over military age or otherwise exempt from service with the Forces for reasons which must be stated in the application.

Applications, stating age, nationality, qualifications, with experience and details of previous appointments, and accompanied by copies of 3 recent testimonials, should be sent not later than Monday, 11th September, 1944, to—

A. V. J. HINDS, Esq., Secretary.

The Royal Liverpool United Hospital, 66, Rodney-street, Liverpool, 1, 26th August, 1944.

LLANELLY AND DISTRICT GENERAL HOSPITAL, 100, Marble Hall-road, LLANELLY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant 31st August, 1944. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications to be addressed to the Secretary-Superintendent.

DERBYSHIRE EDUCATION COMMITTEE. Temporary Assistant SCHOOL MEDICAL OFFICER (Male or Female). Applications are invited for the above appointment at a salary of £600 p.a., rising by annual increments of £25 to £700, plus a war bonus, with a travelling allowance in accordance with the County scale, which at present is as follows: cars of 8 h.p. and under, £70 p.a., plus 2d. per mile; cars of 9 h.p. and over, £75 p.a., plus 2½d. per mile. Candidates must be registered medical practitioners of at least 3 years' standing. The duties will include work under the maternity and child welfare service, and experience in this work and in mental deficiency is desirable. The appointment is subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination. The officer appointed will not be allowed to engage in private or consulting practice, but will be required to devote his (or her) whole time to the duties of the office and will act under the direction of the County School Medical Officer. The appointment will be terminable by 3 months' notice on either side.

Application forms may be obtained from, and should be returned to, the County School Medical Officer, County Offices, St. Mary's Gate, Derby, on or before 16th September, 1944.

EAST SUSSEX COUNTY COUNCIL, Southlands Hospital, SHOREHAM-BY-SEA. Applications are invited from fully qualified Male or Female registered medical practitioners (unmarried) for the post of TEMPORARY RESIDENT ASSISTANT MEDICAL OFFICER (B1) at Southlands Hospital, Shoreham-by-Sea, near Brighton. Salary £400 p.a., with emoluments valued at £90 p.a. Candidates must have had previous hospital experience. The hospital (519 beds) is a general hospital, under the administration of the East Sussex County Council and graded 1A in the Emergency Medical Service Scheme. The duties of the post will be mainly concerned with surgical cases, the administration of anæsthetics, and receiving-ward duties. The post is likely to become vacant early in October. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications should be made on a form obtainable from the County Medical Officer of Health, County Hall, Lewes, and must be returned to him by 16th September, 1944, together with copies of three recent testimonials.

H. S. MARTIN, Clerk of the County Council.

County Hall, Lewes, 21st August, 1944.

CORPORATION OF GLASGOW. Applications are invited from qualified medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B2) at Shieldhall Fever Hospital, Glasgow, S.W.1. Salary at the rate of £250 p.a., plus war bonus and full residential emoluments. R and W practitioners holding A posts, and who must first obtain the sanction of the Scottish Central Medical War Committee, may also apply, when appointment will be limited to 6 months; otherwise not exceeding 12 months.

Applications, stating age, qualifications with dates, and present post (if any), accompanied by copies of 3 recent testimonials, should be addressed forthwith to the Medical Officer of Health, 23, Montrose-street, Glasgow.

THE ROYAL INFIRMARY OF EDINBURGH. Applications are invited from registered medical practitioners, Male and Female, for the following posts, vacant on 1st October:—

1. CLINICAL TUTOR in Surgical Out-patient Department (B1), combined with RESIDENT HOUSE SURGEONSHIP at Beechmount Auxiliary Hospital. Salary £252 p.a., with board, lodging, and laundry allowance.

2. CLINICAL TUTOR in Surgical Out-patient Department (B1), combined with RESIDENT HOUSE SURGEONSHIP at Corstorphine Auxiliary Hospital. Salary £252 p.a., with board, lodging, and laundry allowance.

Suitably qualified R and W practitioners holding B2 posts, also R and W practitioners holding B1 appointments and rejected for the R.A.M.C., are invited to apply, subject to the approval of the Scottish Central Medical War Committee.

Applications to be sent to: The Superintendent, Royal Infirmary, Edinburgh.

LYMINGTON AND DISTRICT HOSPITAL (King Edward VIIth MEMORIAL). (E.M.S. Grade 1. 150 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), vacant now. Salary by arrangement, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months, otherwise it will be for a period mutually agreed upon.

Apply, stating nationality, age, qualifications, experience, and salary required, together with 3 copies of recent testimonials, to the Secretary, Lymington and District Hospital, Lymington, Hants.

CITY OF MANCHESTER. Monsall Hospital for Infectious Diseases. (600 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of JUNIOR RESIDENT ASSISTANT MEDICAL OFFICER (A), vacant at end of September, 1944. The duties of the post are mainly medical. The basic salary for the appointment is £250 p.a., with board, residence, and laundry in addition, subject to the Manchester Corporation conditions of service. A temporary cost-of-living wages addition is payable in addition to the salary stated. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise will be for a period of 12 months.

Applications, stating the full name, age (giving date of birth), nationality, professional qualifications (with dates), particulars of present appointment and past hospital appointments, are to be addressed to the Medical Superintendent, Monsall Hospital, Newton Heath, Manchester, 10, and must be received by him not later than 8th September, 1944. Canvassing in any form is prohibited.

R. H. ADCOCK, Town Clerk.

Town Hall, Manchester, 16th August, 1944.

CUMBERLAND INFIRMARY, Carlisle. (367 Beds.) Applications are invited from registered medical practitioners for the following posts vacant from 1st October next :—

1 HOUSE SURGEON (B2), including R and W practitioners who now hold A posts.

1 HOUSE SURGEON (A), including practitioners within 3 months of qualification and liable under the National Service Acts.

Appointments will be for a period of 6 months. Salary is at the rate of £160 p.a., with board, &c.

Applications should be sent to the Secretary-Superintendent immediately.

Carlisle, 9th August, 1944.

SOUTHEND-ON-SEA GENERAL HOSPITAL. Applications are invited for the post of MEDICAL REGISTRAR (B1), vacant on or about 16th October. Salary at the rate of £350 p.a., with full residential emoluments. The appointment will be for 1 year. Candidates must have had previous experience in a medical post and preference will be given to those holding a higher medical qualification. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, and experience, accompanied by copies of 3 recent testimonials, to be sent by 2nd September to—

P. H. CONSTABLE, House Governor and Secretary.

KING EDWARD VII HOSPITAL, Windsor. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant at the middle of September. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, with copies of recent testimonials, to be sent by 28th August, 1944, to : G. WESTON, Secretary.

HULL ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the post of CASUALTY OFFICER (A), vacant now. Duties in the Casualty and Out-patient Department and some ward work. Salary £200 p.a., with full residential emoluments. Candidates may include practitioners within 3 months of qualification and liable under the National Service Acts. To R and W practitioners the appointment will be for a period of 6 months.

Applications should be addressed to—

R. J. CARLESS, House Governor.

THE STAMFORD, RUTLAND AND GENERAL INFIRMARY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of 3 recent testimonials, should be sent immediately to the Secretary, H. F. DONALD, The Infirmary, Stamford.

PRINCESS ROYAL EMERGENCY HOSPITAL, Swansea. (Swansea COUNTY BOROUGH MENTAL HOSPITAL.) Applications are invited for the temporary post of ASSISTANT MEDICAL OFFICER (B1) for duties in the Emergency Section of the above Hospital. Candidates should have had experience as House Surgeon or House Physician in a general hospital. Salary £400–£25–£450 p.a., with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, experience, &c., together with copies of testimonials, should be sent to the Medical Superintendent as soon as possible.

T. B. BOWEN, Clerk to the Visiting Committee.

BRADFORD ROYAL INFIRMARY. Applications are invited from registered medical practitioners (Male, single) for the appointment of HOUSE SURGEON (A), vacant 1st October. 6 months' appointment. Salary £150 p.a., with full residential emoluments. There are 372 Beds and 8 resident officers. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating age, nationality, qualifications, and previous experience, with copies of 3 recent testimonials, should be sent immediately to—

H. TRUSSON, House Governor and Secretary.

THE STOCKPORT INFIRMARY. (159 Beds.) Applications are invited from registered medical practitioners for the appointment of ASSISTANT RESIDENT SURGICAL OFFICER (B1), vacant 1st September. Applicants should have held house appointments and had surgical experience. Salary is at the rate of £175 p.a., with full residential emoluments. Suitably qualified R practitioners holding B2 appointments, and those now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, to be sent forthwith to—

H. G. PRICE, Secretary-Superintendent.

COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE. COUNTY AND EMERGENCY HOSPITAL, OTLEY. (296 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant since 16th July, 1944. The salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months ; otherwise will be for a period not exceeding 1 year.

Applications should be submitted to the Deputy County Medical Officer, County Hall, Wakefield.

BERNARD KENYON, Clerk of the County Council.

County Hall, Wakefield, August, 1944.

THE KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION. Applications are invited from registered medical practitioners (Male or Female, single) for the appointment of TEMPORARY ASSISTANT RESIDENT MEDICAL OFFICER (B1) at the Adelina Patti Hospital, Craig-y-nos, Swansea Valley (114 Beds for the treatment of pulmonary tuberculosis in men and women and surgical tuberculosis in children). Applicants should have held house appointments and had institutional experience in the treatment of pulmonary tuberculosis. Salary £350–£25–£450 p.a., plus full residential emoluments. Suitably qualified R. and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications, and experience, with particulars as to liability for military service and medical fitness, together with copies of 3 recent testimonials, should reach the undersigned immediately.

NORMAN TATTERSALL, Principal Medical Officer.

Memorial Offices, Cathays Park, Cardiff.

CITY OF NORWICH. Woodlands Hospital. (311 Beds.) Applications are invited from registered medical practitioners for the appointment of ASSISTANT RESIDENT MEDICAL OFFICER (B2), now vacant. The salary is at the rate of £250 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months ; otherwise to 1 year.

Further particulars of appointment to be obtained from the Senior Medical Officer, Woodlands Hospital, Bowthorpe-road, Norwich, and to whom applications should be sent.

BERNARD D. STOREY, Town Clerk.

City Hall, Norwich.

NEWARK TOWN AND DISTRICT HOSPITAL. (70 Normal Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply. Appointment will be for a period of 6 months.

B. C. DION, Secretary-Superintendent.

KENT COUNTY COUNCIL. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1) at County Hospital, Farnborough, near Bromley (1000 Beds), to take charge of the Obstetric and Gynæcological Unit of 50 Beds. Applicants must possess a higher qualification in obstetrics and have had obstetrical and gynæcological experience. The successful candidate will be required to undertake the teaching of pupil midwives undergoing Part I of their training. Salary £600–£750 a year by increments of £50, with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, experience, nationality, and the names and addresses of 2 responsible persons to whom reference may be made as to professional ability, to be sent to the County Medical Officer, County Hall, Maidstone, by the 29th August, 1944.

W. L. PLATTS, Esq., Clerk of the County Council.

County Hall, Maidstone, 12th August, 1944.

DERBYSHIRE ROYAL INFIRMARY, Derby. (Grade IA Hospital.) (531 Beds, including 115 E.M.S.) Applications are invited from registered medical practitioners holding the Diploma of F.R.C.S. for the appointment of full-time RESIDENT SURGICAL OFFICER. Preference will be given to candidates with considerable hospital experience, and the officer appointed will undertake certain administrative duties in addition to his surgical work. In the event of a candidate being married, arrangements could be made for residence near the Hospital.

Salary, if resident, £800 p.a. ; non-resident, £1000 p.a.

Apply for further particulars, stating age and experience, to—

ARTHUR TAYLOR, Superintendent and Secretary.

BECKENHAM HOSPITAL, Beckenham, Kent. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant 1st October. Salary is at the rate of £150 p.a., with full residential emoluments. R or W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months ; otherwise will be renewable for a further period of 6 months.

Applications, accompanied by copies of recent testimonials, and with full details of experience and qualifications, should be addressed to : GORDON EASTO, Secretary.

NORTH STAFFORDSHIRE ROYAL INFIRMARY, Stoke-on-TRENT. (660 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the following appointments :—

RESIDENT ANÆSTHETIST (B2).

HOUSE SURGEON (B2) to the Ear, Nose, and Throat Department.

HOUSE SURGEON (A).

For the B2 posts R and W practitioners who now hold A posts may apply. For the A post practitioners within 3 months of qualification and liable under the National Service Acts may apply. The posts offer exceptional experience. Salary in each case is at the rate of £185 p.a., with full residential emoluments. Appointments will be for a period of 6 months.

Applications as soon as possible to the House Governor.

THE PRINCE OF WALES'S HOSPITAL, Greenbank-road, PLYMOUTH. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (B2), vacant 1st September. The salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent to the undersigned forthwith.

ARTHUR R. CASH, General Superintendent.

GLOUCESTERSHIRE JOINT BOARD FOR TUBERCULOSIS. (Constituent Authorities: The County Council of Gloucester and the Council of the County Borough of Gloucester.) Appointment of TEMPORARY MEDICAL SUPERINTENDENT AND TUBERCULOSIS MEDICAL OFFICER. The above Board with the approval of the Minister of Health invite applications for the joint appointment of temporary Medical Superintendent at the Standish House Sanatorium, Standish, near Stonehouse, and of Tuberculosis Medical Officer for the County and City of Gloucester.

The person appointed will be in charge of the Standish House Sanatorium, and will be responsible for the treatment of the patients and general management of the Sanatorium. He will have charge of the tuberculosis dispensaries and the general arrangements for the provision of tuberculosis treatment in the County and in the City of Gloucester. The normal accommodation at the Sanatorium is 250 Beds for men, women, and children, and there is an orthopædic block.

The officer appointed will be required to devote the whole of his time to his official duties and must not engage in private practice.

Candidates must possess the qualifications required under Article 111 of the Local Government (Qualifications of Medical Officers and Health Visitors) Regulations, 1930.

The commencing salary will be £1000 p.a. and emoluments, including a house of a total value of £200 p.a. All fees receivable in connexion with the appointment must be paid to the Board.

Travelling and subsistence allowances will be in accordance with the Board's scale.

Staff and office accommodation will be provided.

The appointment is subject to the approval of the Minister of Health, and will be determinable by 3 months' notice in writing on either side and is subject to the provisions of the Local Government Superannuation Act, 1937. The person appointed must satisfactorily pass a medical examination.

Forms of application, to be obtained from the undersigned, should be returned accompanied by copies of 3 recent testimonials and must reach me not later than the first post on Monday, the 4th September, 1944, the envelope to be marked "Medical Superintendent and Tuberculosis Officer."

Canvassing, directly or indirectly, will be a disqualification.

GUY H. DAVIS, Clerk of the Joint Board.

Shire Hall, Gloucester, 14th August, 1944.

CITY OF LEICESTER. City General Hospital, Gwendolen-road. Applications are invited from registered medical practitioners, Male and Female, for the following appointments:—

RESIDENT MEDICAL OFFICER (B1) for (mainly) medical duties, vacant in October next. The salary will be £350 p.a., rising to £450 p.a. by £25 p.a. (plus at the present time war-time bonus of £24 14s. p.a.), with full residential emoluments valued at £150 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply. Endorse applications "R.M.O. B1, City General Hospital."

RESIDENT MEDICAL OFFICER (B2), vacant in October next for (mainly) medical duties. The salary is at the rate of £300 p.a. (plus at the present time a war-time bonus of £24 14s. p.a.), with full residential emoluments valued at £150 p.a. R and W practitioners now holding A posts may apply, when the appointment will be limited to 6 months; otherwise it will not exceed 1 year. Endorse applications "R.M.O. B2, City General Hospital."

Applications (on forms supplied), accompanied by copies of 3 recent testimonials, must be submitted as soon as possible and addressed to: E. K. MACDONALD, Medical Officer of Health.

Health Department, Grey Friars, Leicester.

THE LEICESTER ROYAL INFIRMARY. (950 Beds.) Resident post vacancies, 1st October, 1944:—

1 ANÆSTHETIST (B2). Salary £150 p.a.

2 HOUSE PHYSICIANS (A). Salary £150 p.a.

1 ORTHOPÆDIC AND FRACTURE HOUSE SURGEON (B2). Salary according to experience.

1 OBSTETRIC HOUSE SURGEON (A), Female. Salary £150 p.a. This vacancy is at the Maternity Hospital, Causeway-lane, administered by the Infirmary.

6 months' appointments. All with full residential emoluments.

B2 posts: R and W practitioners holding A posts may apply.

A posts: Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Appointments will be made on the 13th September.

Applications should be addressed to the House Governor and Secretary on or before 31st August.

9th August, 1944.

ROYAL WEST SUSSEX HOSPITAL, Chichester. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER AND HOUSE SURGEON (A). Appointment is for 6 months from 10th August, 1944, and includes general surgical, gynæcological, radio-therapy and physiotherapy work. Salary £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating age, qualifications with dates, and nationality, supported by copies of 3 recent testimonials, should be sent to the House Governor and Secretary.

ROTHERHAM HOSPITAL (General Voluntary Hospital —140 Beds.) CASUALTY OFFICER AND ORTHOPÆDIC HOUSE SURGEON (B2), now vacant. Salary £250 to £300 p.a., according to experience, with full residential emoluments. Applications are invited from registered medical practitioners, including R and W practitioners who now hold A posts. To R or W practitioners the appointment will be limited to 6 months.

Applications should be sent at once to—T. H. FLETCHER, Secretary-Superintendent.

ROYAL CORNWALL INFIRMARY, Truro. (330 Beds—5 Residential.) Applications are invited from registered practitioners (Male or Female) for the appointment of ORTHOPÆDIC AND CASUALTY HOUSE SURGEON (B2), vacant 15th September, 1944. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications should be addressed to the Secretary.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON to Special Departments and CASUALTY OFFICER (A) for duty at the Greenbank Road Section, vacant forthwith. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

ARTHUR R. CASH, General Superintendent.

Head Office: Greenbank-road, Plymouth.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A), vacant forthwith. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

ARTHUR R. CASH, General Superintendent.

Head Office, Greenbank-road, Plymouth.

NORFOLK AND NORWICH HOSPITAL, Norwich. Applications are invited for the post of RESIDENT SURGICAL OFFICER (B1). Salary £300–£400 p.a., according to experience, with full residential emoluments. Preference will be given to candidates holding the F.R.C.S. qualification. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, and experience, accompanied by copies of recent testimonials, should reach the undersigned not later than first post on Tuesday, 5th September.

FRANK INCH, House Governor and Secretary.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (255 Beds.) Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of CASUALTY OFFICER (A). The appointment will be for a period of 6 months. Salary is at the rate of £175 p.a., with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent immediately to—

EDWARD L. WIRGMAN, House Governor and Secretary.

THE SHEFFIELD RADIUM CENTRE, THE NOTTINGHAM RADIUM CENTRE AND THE NOTTINGHAMSHIRE COUNCIL OF THE BRITISH EMPIRE CANCER CAMPAIGN. Applications are invited for the post of RADIOTHERAPIST to the Nottingham Radium Centre at the General Hospital, Nottingham. Salary according to qualifications and experience, but will not be less than £1200 p.a., with participation in a superannuation scheme. The successful candidate will carry out his work in consultation, and, when necessary, with the assistance of the Medical Director of the Sheffield Radium Centre; he will be appointed an Assistant Medical Director of that National Centre.

Applications should be received by the undersigned immediately, from whom full details concerning the post can be obtained.

HENRY M. STANLEY, House Governor and Secretary.

The General Hospital, Nottingham.

VICTORIA HOSPITAL, Burnley. (169 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of 2 HOUSE SURGEONS (A) and 1 HOUSE PHYSICIAN (A). Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, with copies of recent testimonials, should be sent immediately to: J. E. WHEATCROFT, Secretary.

VICTORIA HOSPITAL, Accrington. Applications are invited from medical practitioners (Male) for the appointment of HOUSE SURGEON (B2). The salary is at the rate of £200 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.

Apply, with copies of 2 testimonials, to Hon. Secretary.

BURY INFIRMARY, Lancs. (159 Beds.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of CASUALTY AND SPECIALS HOUSE SURGEON (A), now vacant. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for 6 months; otherwise renewable.

Applications, giving full particulars, immediately to—

H. WILKINSON, Superintendent.

GENERAL HOSPITAL, Nottingham. (712 Beds, including E.M.S. Beds.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of RESIDENT CASUALTY OFFICER (A) for the above Hospital. Duties to commence immediately. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

HENRY M. STANLEY, House Governor and Secretary.

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COUNTY COUNCIL OF ESSEX AND URBAN DISTRICT COUNCIL OF THURROCK. COMBINED MEDICAL SERVICE. Applications are invited from duly qualified medical practitioners, possessing the Diploma in Public Health and having special experience in obstetrics, for the vacant joint appointment of TEMPORARY ASSISTANT COUNTY MEDICAL OFFICER AND TEMPORARY ASSISTANT MEDICAL OFFICER OF HEALTH. The salary attaching to the appointment will be at the rate of £500 a year, together with war bonus, rising, subject to satisfactory service, by annual increments of £25 to £700 a year, but the commencing salary may be varied having regard to experience and capabilities.

Forms of application may be obtained from the Clerk of the County Council, to whom they should be returned completed, accompanied by copies of 3 recent testimonials, not later than 7th September, 1944. Canvassing, whether directly or indirectly, is forbidden.

JOHN E. LIGHTBURN,
Clerk of the County Council.
A. E. POOLE,
Clerk to the Urban District Council of Thurrock.

County Hall, Chelmsford, 14th August, 1944.

CITY OF STOKE-ON-TRENT. Applications are invited from registered medical practitioners (Female) for the temporary position of ASSISTANT MEDICAL OFFICER, Maternity and Child Welfare Department. Applicants should have had special experience in antenatal work and the care of infants and young children. Preference will be given to candidates possessing a Diploma in Public Health. The officer appointed will be required to devote the whole of her time to the service of the Corporation and to carry out any other duties required by the Council. The salary scale will be £500 p.a., rising by annual increments of £25 to £700, plus bonus. Previous experience in maternity and child welfare work will be taken into consideration in fixing the commencing salary for the position.

Applications, including full information as to liability for national service, medical fitness, and position regarding deferment, and enclosing copies of 3 recent testimonials, to be endorsed "Assistant Maternity and Child Welfare Officer" and delivered not later than 4th September, 1944, to—

E. B. SHARPLEY, Town Clerk.

ROYAL SUSSEX COUNTY HOSPITAL, Brighton. (375 Beds.) Applications are invited from registered medical practitioners (Male or Female), including practitioners within 3 months of qualification and liable under the National Service Acts, for the post of HOUSE SURGEON (A), vacant the beginning of October. The salary attached to the post is £175 p.a., with full residential emoluments. To R and W practitioners the appointment will be for a period of 6 months; otherwise will be for a period of at least 6 months.

Applications should be sent to—

L. L. W. LANCASTER-GAYE, Secretary-Superintendent.

ROYAL SUSSEX COUNTY HOSPITAL, Brighton. (375 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of HOUSE PHYSICIAN (B2), vacant middle October. The salary is at the rate of £175 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months; otherwise may be extended.

Applications to—

L. L. W. LANCASTER-GAYE, Secretary-Superintendent.

THE ROYAL LIVERPOOL CHILDREN'S HOSPITAL, Heswall, CHESHIRE. RESIDENT MEDICAL OFFICER (B2). Applications are invited from registered medical practitioners, Male and Female, including R and W practitioners who now hold A posts, for the above appointment, vacant on 16th September, 1944 (approximately), at the Heswall (Country) Branch of the Hospital (240 Beds). Salary at the rate of £250 p.a., with full residential emoluments. To R or W practitioners appointment will be limited to 6 months.

Applications, accompanied by copies of testimonials and the name of a referee, should be sent to the Secretary, Royal Liverpool Children's Hospital, Myrtle-street, Liverpool, 7, by an early post.

THE ROYAL LIVERPOOL CHILDREN'S HOSPITAL, Heswall, CHESHIRE. RESIDENT SURGICAL OFFICER (A). Applications are invited from registered medical practitioners, Male and Female, for the above appointment, now vacant, at the Heswall (Country) Branch of the Hospital (240 Beds). Salary at the rate of £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, accompanied by copies of testimonials and the name of a referee, should be sent to the Secretary, Royal Liverpool Children's Hospital, Myrtle-street, Liverpool, 7, by an early post.

ROYAL MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, near MANCHESTER. Applications are invited for the post of RESIDENT SURGICAL OFFICER (B1). Salary £175 p.a. The appointment is for a period of 6 months, commencing immediately. Suitably qualified R practitioners holding B2 posts, also those now holding B1 and have been rejected by the R.A.M.C., may apply.

Applications, stating age and accompanied by copies of not more than 3 recent testimonials, to be sent to the undersigned immediately.

By Order,
H. HEARDMAN, General Superintendent and Secretary.

ST. NICHOLAS' ORTHOPÆDIC HOSPITAL, Pyrford, near WOKING. Applications are invited from registered medical practitioners (Male and Female) for the appointment of HOUSE SURGEON (B2). Salary £200 p.a., resident. (The Hospital has 285 Beds, including E.M.S., is an Orthopædic Centre and a Peripheral Nerve Centre; additionally there is a continuous course of instruction for undergraduate students of St. Thomas's Hospital.) The period of appointment is for 6 months. R and W practitioners holding A posts may apply.

Apply immediately to the Secretary.

COUNTY BOROUGH OF HASTINGS. Hastings Municipal HOSPITAL. Applications are invited from registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER (B2) (Female). The Hospital contains 350 Beds, including a Children's Block and a Maternity Unit of 28 Beds, and is a Group A1 Hospital under the Government's Emergency Hospital Service. Candidates must be fully qualified registered medical practitioners, and should have held a previous resident hospital appointment. Preference will be given to candidates with practical experience of general medicine and anæsthetics. The person appointed will give her whole time to the service of the Council in accordance with the terms of her appointment. Salary £300 p.a., with apartments, board, and laundry. W practitioners holding A posts may apply, when appointment will be limited to 6 months; otherwise for 1 year, and is determinable by 1 month's notice on either side.

Applications, on forms to be obtained from me, must be delivered at my office not later than the 15th September, 1944. Canvassing in any form, either directly or indirectly, will be a disqualification.

D. W. JACKSON,
Town Clerk and Director of Social Welfare.

Town Hall, "Summer Fields," Hastings.

CITY OF LONDON MENTAL HOSPITAL, Stone, near Dartford, KENT. Applications are invited from registered medical practitioners for the post of TEMPORARY MEDICAL OFFICER (B1) at the above Hospital. Salary 10 guineas per week, plus residential emoluments. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and have been rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, should be sent as soon as possible to the Acting Medical Superintendent.

GENERAL HOSPITAL, Nottingham. Ear, Nose, and Throat Department (40 Beds) and large Out-patient Department. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A) for the above Department. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications to be addressed to the undersigned, stating age, qualifications, experience, &c., together with copies of testimonials.

HENRY M. STANLEY,
16th August, 1944. House Governor and Secretary.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) Casualty OFFICER (B2) required to commence as soon as possible. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months. Salary at the rate of £200 p.a., with full residential emoluments.

Applications should be sent as soon as possible to—

H. J. JOHNSON, General Superintendent and Secretary.

THE KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION. SULLY HOSPITAL, SULLY, GLAM. (300 Beds—pulmonary tuberculosis; X-ray Department; Major Thoracic Unit, &c.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of JUNIOR RESIDENT MEDICAL OFFICER (B2). Salary at the rate of £200 p.a. with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise will be for a period of 1 year.

Applications to be sent immediately to—

N. TATTERSALL, Principal Medical Officer.

NEW ZEALAND. The Department of Health in New Zealand invite applications for the position of PSYCHIATRIST for the Queen Mary Hospital, Hanmer Springs, New Zealand. Salary £950 p.a. (New Zealand currency), plus free house, fuel, &c., valued at £150 p.a. Free passage and half salary on voyage.

For further particulars apply to High Commissioner for New Zealand, 415, Strand, London, W.C.2, by whom applications will be received until 31st August.

Doctors, Male and Female, required for Locums and Assistantships. Vacancies for Hospital Locums and Ships' Surgeons. Practices and Partnerships for disposal.—Write: A. SHAW, Medical Transfer Agent, Premier Buildings, 88, Church-street, Liverpool.

Educated and well-travelled Girl, 24 years of age, discharged from Services on medical grounds, requires full-time employment—Receptionist or work of similar nature. Resident in London.—Address, No. 469, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Psychiatrist, British, exempt, with considerable experience of all forms of modern therapy and hospital administration, seeks change, for personal reasons, as Deputy Medical Superintendent or Senior Medical Officer.—Address, No. 470, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Sales Manager (British) for London Electrical and Surgical Instrument Makers. Write, stating age, education, previous experience, and salary required.—Box No. 78, C.R.C., 29, Hertford-street, W.1.

For Sale in Home Counties, old-established secure Practice. Total income in excess of £4000 p.a. Lovely house. Mortgage arrangeable.—Address, No. 471, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Typing undertaken, theses with tables, lectures, &c.: 3s. per 1000 words, carbons 3d. per 1000.—JEPSON, 74a, Alexandra-road, N.W., after 5.30.

Practice for Sale. Busy N.W. coastal resort. Panel 1500. Receipts over £4000. Principal specialising. Good house and excellent position. 1¼ years' purchase. Address, No. 466, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Microscopes wanted for essential work and war factories; high prices offered. Also Leicas and similar Cameras and "Talkies." Prompt cash.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

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